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ABSTRACT

This curriculum guide for food science and nutrition is one of a number of guides developed for use in vocational home economics education in Texas. Introductory materials address use of the guide and list the essential elements upon which the content is based. The guide is divided into five units: nutrition, cultural influence on food and nutrition, management, relating food and nutrition to special needs, and career options and adjustments. Each unit lists competencies and subcompetencies at the beginning of the section. Concepts related to the competencies are listed in the right-hand columns. Learning and evaluation experiences are found in the left-hand columns. Teaching aids keyed to learning and evaluation experiences--including transparency masters, activities, and exercises--are located at the end of the guide. Designations have been used in the content for (1) developing skills within the Texas Common Elements for all vocational education; (2) applying basic/academic skills; and (3) developing critical thinking skills. Key points for content discussion and review and methods for developing critical thinking skills are also indicated. (YLB)

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FOOD SCIENCE AND NUTRITION

VOCATIONAL HOME ECONOMICS EDUCATION

TEXAS EDUCATION AGENCY

AUSTIN, TEXAS

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FOOD SCIENCE AND NUTRITION

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Food Science and Nutrition is one of the various curriculum guides developed for use in Vocational Home Economics Education in Texas. Additional guides are available for secondary education in the areas of Comprehensive and Technical Home Economics, Home Economics Cooperative Education, Home Economics Pre-employment Education (including courses designed for the academically disadvantaged and handicapped students). Other guides are available for adult education and post-secondary education in home economics subject training areas.

Overview of the Guide

Each subject guide is written to the teacher and is correlated closely with the Essential Elements prescribed by the State Board of Education in Texas Administrative Code 75.50 (b), and 75.83 (a) thru (x). The competencies in each guide are the essential elements and the sub-competencies are the sub-elements prescribed in the Texas Administrative Codes for Vocational Home Economics. The conceptual outline as shown in the left hand column (a corresponding learning and evaluation experiences in the right hand column) relate to the sub-element of each unit. Teaching Aids keyed to the learning and evaluation experiences are located at the end of each book. Designations have been used in the content for developing skills within the Common Elements to all vocational education courses with a designation of [C]. The application of basic/academic skills has been given a designation of [B]. Key points for content discussion and review have been given a KEY QUESTION designation, and methods for developing critical thinking skills have been given a CRITICAL QUESTION designation.

Particular care has been taken to provide age appropriate concepts and learning activities. Teachers will need to exercise judgement, initiative, imagination, and creativity in working cooperatively with students, parents, school administrators, and local advisory council members to develop a local program that will serve the students enrolled in Vocational Home Economics Education. The subject area guides are intended to guide the content, not dictate the content.

TEACHERS SHOULD NOT EXPECT TO USE ALL OF THE SUGGESTED EXPERIENCES IN ONE CLASS NOR FEEL THAT ALL ARE NEEDED TO TEACH ONE ESSENTIAL ELEMENT (WHICH INCLUDES THE COMPETENCY AND SUB-COMPETENCIES). The variety of experiences included should enable teachers to select and use those teaching-learning experiences that will help students reach the objectives.

An excellent resource for information on teaching all students is the book, *Guide to Teaching*. The book addresses methods for teaching students with varying learning levels. It also provides special guidelines and information regarding the at-risk students and the disabled or handicapped students.

TAC 75.83
FOOD SCIENCE AND NUTRITION

(i) Food science and nutrition (1/2 unit) shall be a laboratory-oriented course and include the following essential elements:

(1) Concepts and skills related to nutrition. The student shall be provided opportunities to:

(A) discuss the functions and sources of nutrients;
(B) analyze the relationship of digestion and metabolism to health;
(C) determine nutritional needs throughout the life cycle;
(D) assess long term effects of food choices on health;
(E) compare various guidelines for dietary planning;
(F) analyze nutritional adequacy of selected diets;
(G) relate food intake to individual and family health;
(H) evaluate nutrition information for reliability; and
(I) compare food fads, fallacies, and facts.

(2) Concepts and skills related to the cultural influence on food and nutrition. The student shall be provided opportunities to:

(A) compare cultural influences on individual and family food options; and
(B) analyze nutritional adequacy of diets representative of different cultures.

(3) Concepts and skills related to management. The student shall be provided opportunities to:

(A) apply principles of consumerism;
(B) apply management skills in meeting daily food needs;
(C) relate the effects of work space and equipment on meal preparation;
(D) apply safety and sanitation procedures in food preparation tasks;
(E) prepare nutritious meals appropriate for families and other groups; and
(F) plan nutritious diets to meet various budgetary needs.

(4) Concepts and skills relating food and nutrition to special needs. The student shall be provided opportunities to:

(A) compare special dietary needs caused by age and health conditions;
(B) contrast dietary needs related to sports and other activities;
(C) differentiate eating disorders, their effects, and treatment; and
(D) propose ways persons in self care such as children, elderly, and handicapped may meet nutritional needs.

TAC 75.83
FOOD SCIENCE AND NUTRITION
UNIT I

COMPETENCY: (i.1) *Concepts and skills related to nutrition.*

SUB-COMPETENCIES:

(A) *Discuss the functions and sources of nutrients.*

(B) *Analyze the relationship of digestion and metabolism to health.*

(C) *Determine nutritional needs throughout the life cycle.*

(D) *Assess long term effects of food choices on health.*

(E) *Compare various guidelines for dietary planning.*

(F) *Analyze nutritional adequacy of selected diets.*

(G) *Relate food intake to individual and family health.*

(H) *Evaluate nutrition information for reliability.*

(I) *Compare food fads, fallacies, and facts.*

CONCEPTS

I. Nutrition skills
   A. Functions and sources of nutrients
      1. Vitamins
         a. Water soluble vitamins
         b. Fat soluble vitamins

LEARNING AND EVALUATION EXPERIENCES

Have students review resource materials to write short reports on the history of the scientific discovery and classification of major nutrients and/or specific vitamins, minerals, amino acids, and fatty acids. Have students present an oral report on the findings. Follow the reports by leading a class discussion about nutrition research. Evaluate students' reports on the basis of content and effective communication skills. KEY QUESTIONS: Have researchers discovered all there is to know about the nutrients in foods? What other great scientific discoveries in the field of nutrition might take place in the future? CRITICAL QUESTIONS: What answers to nutrition questions would be most valuable to people in today's world? Why is nutrition research important to people?[B]

Have students study information on Vitamins A, B, C, D, E, and K. Guide students to study references to identify each vitamin's major functions in the body. Have students identify food sources for each vitamin and health problems which may occur if a person gets too much or too little of each vitamin. Have students complete a teacher-developed work sheet, puzzle, or quiz using the information gathered through the study of reference materials.[B]

[B] = Basic Skill Reinforcement

Have students read and study information related to fat soluble and water soluble vitamins. Divide the class into small groups and have students discuss and answer the following questions. Ask each group report their findings to the class. KEY QUESTIONS: Which vitamins are fat soluble? water soluble? Which vitamins can be stored by the body? Which ones must be replaced daily? What are the functions of each vitamin, food sources, and health problems associated with too little or too much of the vitamin?[C]

Have students list foods eaten in the last four days. Using a nutritive values of food chart, have students record the amounts of the vitamins in the foods eaten and total the amounts. Have the students compare their totals to the recommended dietary allowances, and evaluate vitamin intake based on the fact that fat soluble vitamins can be stored by the body, but water soluble vitamins must be replaced daily. KEY QUESTIONS: Did the totals reveal a diet low in any particular vitamin? Was there an excess of any vitamin? If the dietary intake for the four day period was low in any vitamins, what food sources high in that vitamin might be included in the diet? Can eating an excess of foods high in fat soluble vitamins be harmful? What are toxic effects of an excess of fat soluble vitamins in the diet? If someone suspected that they were experiencing a toxic effect from eating a diet too high in fat soluble vitamins or from over supplementation in the diet through the use of vitamin and mineral supplements, how might this person learn more about the signs of nutrient toxicity? (The same menu recall items can be evaluated similar to vitamins to determine intake adequacy of other nutrients.)[B]

Assign each student to review a magazine or newspaper article relating to vitamin supplements. Have them write a short critique of the article. Lead a class discussion on the articles and have the students assess their reliability as sources of accurate information and valid nutrition advice for persons who are not well informed about nutrition. KEY QUESTIONS: Was the author an expert in the field of nutrition? Was the intent of the article to inform or to sell a product? Are vitamin supplements necessary if a varied, balanced diet is followed?[B]

Invite a resource person to class who is knowledgeable about nutrition, such as a dietitian, nutritionist, extension service home economist/specialist, or health care specialist to speak on vitamins, minerals, carbohydrates, proteins, and/or fats. Have students prepare questions in advance to ask the resource person. KEY QUESTIONS: What are the roles and functions of water soluble and fat soluble vitamins in the body? What are the roles and

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[C] = Common Essential Element
[B] = Basic Skill Reinforcement

functions of minerals in the body? What are the major minerals needed by the body? Which minerals are considered to be trace minerals? What are the roles and functions of carbohydrates, fats, and proteins in the body? What are the potential harmful effects to the body if there are excessive or deficient intakes of the various nutrients? What foods are the best sources of the various nutrients? Are over-the-counter vitamin and/or mineral supplements suitable for the average person? What precautions should people practice related to vitamin and/or mineral supplements? What is nutrient toxicity? What is the relationship between each of the nutrients and the maintenance of good health and well-being?

2. Minerals

Define the term *minerals*. Identify which minerals are designated as macrominerals and which ones are microminerals or trace elements. Prepare a chart indicating specific minerals as macrominerals or microminerals. KEY QUESTIONS: What is the significance of minerals being classified as macrominerals or as microminerals? Is it more difficult to include microminerals or macrominerals in the daily diet? Why or why not? How widely are microminerals and macrominerals found in foods?[B]

Have students study resources to obtain information on iron, iodine, potassium, calcium, phosphorus, and sodium. Ask students to identify the functions of these minerals in writing. Prepare a chart on the board and lead a class discussion on the functions of these minerals.[B]

Lead a class discussion on minerals. Have students prepare a chart on the chalkboard indicating the functions in the body and food sources of minerals. KEY QUESTIONS: Which minerals aid in the development of strong bones and teeth? Which minerals help regulate other body processes? Which one helps the thyroid gland function properly? Which mineral helps to prevent anemia? What other functions do minerals perform in the body?

NOTE: A good reference for fact sheets on minerals and an additional source of suggested learning activities is *The New Nutrition* (1982) available from the Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas. Refer to the sections in the Teacher's Guide and Student's Guide on milk and milk products and avoiding too much sodium in the diet.

Have students examine a chart of the nutritive values of food and compile a list of good food sources of iron, calcium, iodine, potassium, phosphorus, and sodium. KEY QUESTIONS: To be nutritionally healthy, how should one plan a diet which includes

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[B] = Basic Skill Reinforcement

adequate amounts of each of these nutrients? If one's diet was lacking in foods rich in one or more of these minerals, how might one increase intake without resorting to the use of mineral supplements?

3. Carbohydrates

Have students look up definitions of the following terms related to carbohydrates: disaccharide, monosaccharide, sucrose, lactose, maltose, glucose, fructose, galactose, polysaccharide, cellulose, simple carbohydrate, and complex carbohydrate. Have students share the definitions with the class. KEY QUESTION: How do these terms relate to carbohydrates?[B]

Have students study references and present oral reports on carbohydrates, including sources and functions of the nutrient. Evaluate oral reports on the basis content and of effective communication skills. KEY QUESTIONS: What are good sources of carbohydrates? What are the functions of carbohydrates? Why are carbohydrates considered the best source of energy?[B]

NOTE: A good reference for fact sheets on carbohydrates and an additional source of suggested learning activities is *The New Nutrition* (1982) available from the Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas. Refer to the sections in the Teacher's Guide and Student's Guide on eating foods with adequate starch and fiber and avoiding too much sugar.

Lead a class discussion regarding problems that may occur from having a diet which is too high or too low in carbohydrates. Lead a class discussion regarding what other nutrients are used for energy when inadequate levels of carbohydrates are consumed. Refer to Teaching Aid 1, Case Study on Weight Consciousness. KEY QUESTIONS: Would Janis be at risk? What effects could a zero carbohydrate diet have on her? Is this a safe weight loss program? Why or why not?

Have students bring articles or books on low-carbohydrate diets or provide resources which describe major weight loss diets which suggest that high-protein/low-carbohydrate combinations will achieve weight loss. Lead a class discussion on weight loss plans. Identify hazards that may be encountered by users of these plans.

Present information to the class on sugar consumption and the negative aspects of consuming excess amounts of sugar. Lead students in brainstorming to identify guidelines for decreasing sugar consumption. Example guidelines include: limiting sugary snacks between meals and eating more fresh fruits as substitutes for sugary desserts.

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Present information on fiber in the diet. Have students rewrite the menus shown in Teaching Aid 2, Put Fiber in Your Menu. Have students individually list menu alternatives, and share their suggestions with the class. KEY QUESTIONS: What ingredients in the suggested menu alternatives are high in fiber? Does the addition of foods higher in fiber increase the cost of meals? Is it easy to find foods which are higher in fiber among restaurant or fast food establishment menu choices? CRITICAL QUESTIONS: Why should people choose to eat foods which are higher in fiber when they prefer the taste and consistency of foods which have lower amounts of fiber? Should consumers try to convince food service establishments to include foods which are higher in fiber? What might be the consumer reaction if food service establishments included items on the menu which were advertised as being high in fiber?
4. Fats	Have students examine classroom resources to obtain information on fats in the diet. As they research, have them define the following terms: lipid, fatty acids, saturated fat, unsaturated fat, polyunsaturated fat, cholesterol, and linoleic acid. Have students share the definitions with the class. Present information on the functions of fat. Lead a class discussion on the positive and negative aspects of fat in the diet. NOTE: A good reference for fact sheets on fats in the diet and an additional source of suggested learning activities is *The New Nutrition* (1982) available from the Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas. Refer to the sections in the Teacher's Guide and Student's Guide on milk and milk products, meats and legumes, and on avoiding too much fat in the diet. Using charts identifying the nutritive values of foods or examining labels on food products that list ingredients and/or nutritive content of foods, have each student identify 15 to 20 foods that are high in saturated fat. Compile a master list on the chalkboard of the foods identified by the students. KEY QUESTIONS: Which of the foods has high amounts of hidden fat, especially fat which is mostly saturated? Would all of the foods on the master list need to be eliminated from the diets of people whose blood level of cholesterol and lipids was above normal? Why or why not? As a class, examine charts identifying the nutritive values of food to determine whether certain meats, fish, or poultry are high, moderate, or low in fat content. Have students divide into groups and answer the following questions. KEY QUESTIONS: Which type of meat (chicken, fish, red meat) is lowest in fat content and which type is highest in fat content? If a person prefers to eat red

meat rather than fish or poultry, what might the person do to reduce the level of saturated fat obtained from the red meat eaten?

Working in groups, have students develop a list of ways for teenagers to avoid too much fat, saturated fat, and cholesterol in their diets. Suggestions might include:

1) Select more chicken, fish, beans, and lean meats for protein.
2) Use eggs, liver, and shell fish in moderation.
3) Limit butter, cream, hydrogenated margarine, shortening, coconut oil, and foods containing these fats or oils, especially snack foods which contain high amounts of hidden saturated fat.
4) Trim fat from meats.
5) Eat foods which have been roasted, boiled, baked, or broiled rather than fried.
6) Read labels to determine the amount and types of fat in foods.

Have students examine Teaching Aid 3, Case Study on Exercise and Diet. KEY QUESTIONS: What guidelines would be important for John to follow if he wants to decrease his caloric intake but still maintain nutritional well-being? How could the percentage of his total caloric intake provided by fat be determined? What alternative foods might John eat which would lower his fat intake and not require drastic changes in his diet?

Have students read and write a report on a current article related to fat in the diet. Articles might include information on cholesterol, saturated or unsaturated fat, or other topics describing recent medical or nutrition research findings on the effects of fat in the diet on the health status of individuals. Evaluate students' reports on the basis of content and written communication skills.[B]

5. Protein

Present a lecture defining protein and amino acids. Identify and describe the functions of protein in the body. Distinguish between complete and incomplete proteins considered to be low and high quality proteins. Identify foods that are sources of complete and/or incomplete proteins. Identify foods that are sources of low and high quality proteins. NOTE: Make students aware that there are 22 amino acids that comprise protein. Emphasize that only nine of the amino acids are considered essential for good health and those nine amino acids are not manufactured by the human body. Foods eaten as a part of the daily diet must supply the nine essential amino acids. Use Teaching Aid 4, Amino Acids, to point out or identify the nine essential amino acids. KEY QUESTIONS: What can be done to an incomplete protein food to make it a complete

[B] = Basic Skill Reinforcement

protein food? What are some incomplete protein food sources that can be combined to form complete proteins? What are the differences between low and high quality proteins? What are some food sources of low quality proteins? What are some food sources of high quality proteins? How can low quality proteins be supplemented to make them into higher quality protein sources? What is the relationship between the consumption of complete and/or incomplete proteins and the maintenance of good health? Does consumption of low and/or high quality protein influence an individual's well-being? Why or why not? It there a relationship between protein consumption and good health and well-being? Why or why not?

NOTE: A good reference for fact sheets on protein and an additional source of suggested learning activities is *The New Nutrition* (1982) available from the Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas. Refer to the sections in the Teacher's Guide and Student's Guide on nutrients, milk and milk products, and meat and legumes.

List the functions of protein on the chalkboard. Since some people believe that athletes or other groups may require more protein than others, have students survey participants in various sports in school and coaches. KEY QUESTIONS: What are their beliefs about protein? Based on a knowledge of nutrition, are the beliefs accurate? Why?

Have students develop a list of food sources high in complete protein and a list of food sources containing incomplete protein. Analyze and price the lists to determine the most and least expensive sources of protein. Compare the protein content using a chart showing the nutritive values of foods. KEY QUESTIONS: Does the cost of the food have a relationship to the amount of protein? Can adequate protein be provided on a low income budget? What are good sources of low cost protein?[B]

Lead a class discussion on health problems that may occur from eating too little protein. KEY QUESTIONS: What is kwashiorkor? What are the symptoms? Who develops kwashiorkor? Does it occur in the United States? CRITICAL QUESTIONS: Is protein malnutrition a world health problem? What should persons in developed countries, such as the United States, do to assist persons in countries where protein malnutrition is a concern?

As an enrichment experience, have students take part in a laboratory activity in which they compare the protein content of prepared foods, such as TV dinners, pot pies, or other

[B] = Basic Skill Reinforcement

convenience foods. Have students compare the prices of various forms of the same food items. Lead a class discussion about the cost of processing foods. Have students write a report on the findings of their comparisons. Evaluate students' reports on the basis of content and written communication skills.[B] [C]

6. Water

Present information on the functions performed by water in the body. Include the regulation of body processes, the regulation of temperature, and water's role as an essential element of body fluids, blood, and cells.[B]

After students have read classroom resources to establish a definition of *water* and to determine its role and functions with the body, lead a class discussion that includes the following questions. KEY QUESTIONS: What percent of body weight is made up of water? How much water should people consume daily? Why is it important to consume this much water each day? How long can a person survive without water? How long can a person survive without food if they have plenty of water? What are common foods which are good sources of water in the diet?

B. Digestion and metabolism

1. Digestion and absorption

Have students study references on the digestive system and write definitions of the the following terms: absorption, digestion, pepsin, pancreatic juice, enzyme, saliva, ptyalin, peristaltic waves, gastric juices, duodenum, jejunum, ileum, and bile. During a class discussion, ask students to share the definitions with the class. KEY QUESTION: How can digestion influence a person's health and well-being?[B]

Lead a class discussion on the steps and processes involved in digestion and absorption. Have students study resources or view audiovisuals to identify how digestion and absorption of nutrients takes place in the body. KEY QUESTIONS: Why is digestion important? What is the relationship between digestion and maintenance of good health? How can a person promote good digestion?[B]

Lead a class discussion regarding the following terms related to digestion and absorption: mouth, mastication, esophagus, stomach, small intestine, large intestine and villi, absorption, amino acids, fatty acids, glucose, fiber, and glycerol. KEY QUESTIONS: What part of the digestive process begins in the mouth? What are the villi? How do nutrients reach the liver? What nutrients are changed into glucose by the liver? How is the liver's extra glucose, called glycogen, used in the body? How is excess glucose stored?[B]

[B] = Basic Skill Reinforcement

[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	NOTE: A good reference for fact sheets on digestion and an additional source of suggested learning activities is *The New Nutrition* (1982) available from the Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas. Refer to the sections in the Teacher's Guide and Student's Guide on digestion and on eating foods with adequate starch and fiber.
	Have students divide into groups. Assign the groups to report on either carbohydrates, fats, or proteins by preparing a chart or poster which illustrates the digestion of their assigned nutrient. Have each group prepare an oral report to present the digestive process for the nutrient.[C]
	Invite resource persons from the health community to class to discuss problems related to the digestive tract. Examples include hiatal hernia, ulcers of the stomach and small intestine, anorexia nervosa, problems related to prolonged induced vomiting, and/or bulimia. Have students prepare questions to ask the resource person. KEY QUESTION: What types of diet restrictions or additions are recommended to assist in correcting these problems?[B]
2. Energy metabolism	Study resources to become familiar with the process of metabolism. KEY QUESTIONS: What are the tasks that the nutrients perform during metabolism? Where does metabolism take place in the body?[B]
	Define the following terms related to regulation of body processes: *hormones, enzymes*, and *coenzymes*. KEY QUESTIONS: What nutrients make up the hormones and enzymes? What nutrients make up the coenzymes? What is the function of each of these body regulators?[B]
	As a class enrichment activity, have students prepare posters or bulletin boards to illustrate the functions of hormones, enzymes, or coenzymes.
	Have students study resources related to the process of energy metabolism. Using the formula provided in Teaching Aid 5, Estimating Energy Output, have students calculate their own basal metabolic rates and energy requirements, computing a total daily caloric requirement. Using Teaching Aid 6, Calorie Expenditure, lead a class discussion on the differences in activities and energy requirements for the activities. KEY QUESTIONS: What is a kilocalorie? How many kilocalories are available from one gram of carbohydrate? of fat? of protein? CRITICAL QUESTIONS: Can

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

selection of a person's activities influence their calorie expenditures and/or consumption requirements in order to maintain good health? Why? What factors cause some activities to require the expenditure of more calories per hour than other activities?[B]

C. Nutritional needs through the life cycle

1. Mother and infant

a. Weight gain during pregnancy

NOTE: The content identified in competencies I.E., I.H., I.I., and I.F. of this unit are appropriate to be taught in that order prior to competency I.C.

Lead a class discussion on recommendations regarding weight gain during pregnancy. KEY QUESTIONS: How many additional calories are recommended during pregnancy? How can additional nutrients be included in the diet without consuming excessive calories? What dangers are associated with excessive weight gain during pregnancy? What dangers are possible if a pregnant woman attempts to diet to lose weight? How is salt intake related to weight gain?

Lead a class discussion using Teaching Aid 7, Case Study on Pregnancy and Diet. KEY QUESTION: Can a pregnant woman eat nutritionally and obtain the recommended nutrients without consuming too many calories?

Have students plan a menu for a pregnant woman for one day that will meet her nutrient requirements and provide an additional 300 calories consisting of a balanced intake of nutrients. Refer to Teaching Aid 8, Menu Planning Sheet, and Teaching Aid 9, Guide for Meal Planning, as aids in planning menus.[B]

b. Cautions

Invite a guest speaker such as a nutritionist or representative from a health department to class to discuss the dangers that alcohol and caffeine consumption and smoking may have on a pregnant woman and/or her unborn child. NOTE: Emphasis should be placed on the influences of alcohol and caffeine consumption and smoking on maintaining the nutritional well-being of both the pregnant woman and her unborn child. Fetal alcohol syndrome, impaired mental functioning, and increased rick of accidents on the part of the pregnant woman should also be emphasized by the resource person during the presentation. KEY QUESTIONS: What dangers does alcohol consumption present to the health of the unborn child? What dangers does alcohol consumption present to the pregnant woman's health? What danger factors does smoking introduce to the health of the pregnant woman and her unborn or newborn child? What dangerous effect can caffeine consumption have on the health of the pregnant woman and her unborn child?

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Have students view audiovisuals on alcohol consumption during pregnancy and fetal alcohol syndrome. KEY QUESTIONS: How does fetal alcohol syndrome affect individuals and their families? How can individuals decrease the risk of a baby acquiring fetal alcohol syndrome? What other harmful effects can alcohol consumption have on a pregnant woman or her unborn child? What is the relationship of alcohol consumption and the nutritional well-being of the pregnant woman and her unborn child?
	Have students study information related to consuming caffeine during pregnancy. KEY QUESTIONS: How does caffeine affect the fetus? Is there a safe amount of caffeine that a pregnant woman can consume?
	Invite a resource person to class to present information on the relation of alcohol and drugs on nutrition. Relate to the students that these substances may affect nutritional status by increasing or decreasing appetite, inhibiting the synthesis of nutrients, reducing the absorption or increasing the excretion of nutrients, and altering the transport, use, or storage of nutrients. Have students prepare questions to ask the speaker.
c. Lactation and infant feeding	Show students the chart in Teaching Aid 10, Composition of Human Milk and Cow's Milk. Have the students identify major differences in composition between the two. Provide references on infant nutrition and have students find out major reasons why there are differences between human milk and cow's milk in the percentage of sugar (lactose), types of protein (casein), certain vitamins (including vitamin C and vitamin K), and minerals (sodium, potassium, and calcium).
	Obtain several forms of infant formula such as dehydrated, concentrated, and ready-to-feed. Include soy-based and cow's milk-based, and have students prepare the formulas as directed. A comparison test for appearance could be conducted so that the students become aware of the characteristic thinness of properly prepared formula. Following the comparison laboratory, lead a class discussion on the differences among the formulas and compare infant formulas to cow's milk. Lead a class discussion on reasons why infant formula or human milk is better for an infant than cow's milk. Also be sure to include the reasons why breast feeding may not be appropriate for all mothers and babies.
	Prepare a display of commercially prepared baby foods, including cereals, canned vegetables, fruits, and meats in regular and junior, or toddler, consistencies. Indicate the cost of the various items and have each student develop a one-week menu for an infant, followed with a cost estimate of feeding the infant these commercially prepared products. In addition, have students

indicate on their menus the vitamins or minerals, if any, which have been added to each of the food items selected for the menu. If nutrition information is provided on the label, have the students estimate what percentage of the Recommended Dietary Allowances (RDA) for babies is provided by the foods planned for each day's menu.[B]

Lead a class discussion on the importance of introducing solid foods to babies at the appropriate time. KEY QUESTIONS: At what age are solid foods usually added to a baby's diet? What types of solid foods are usually given first to a baby? How are additional new foods introduced to an infant? What would be the benefits of waiting to introduce solid foods to a baby when he or she is at least six months old?

As an enrichment experience, conduct similar comparison laboratories on various infant foods, including fruit juices, cereals, and pureed vegetables and meats. Compare prices of equal size servings of home-prepared baby foods and commercially prepared foods. Lead a class discussion on ways that commercially prepared baby foods may become contaminated after opening as a result of poor handling or storage procedures. Emphasize that cost is just one factor to consider in comparing baby foods which are prepared at home and commercially prepared foods. NOTE: Vitamin and mineral fortification of fruit juices and cereals by manufacturers of baby foods make them more desirable in some cases, since home-prepared foods would not contain these added vitamins and minerals such as vitamin C and iron. The time and energy involved in making baby foods are also factors to consider, as is the danger of food contamination which may occur in home-prepared foods during preparation and as a result of poor handling or storage procedures.[B]

d. Food intolerances in infancy and young childhood

Obtain and present to the class information from a pediatrician, allergist, or health department representative on food intolerances of infants and young children, or invite a resource speaker to class to speak on the topic of food intolerances common to infants and young children. KEY QUESTIONS: What are the common food intolerances for infants and young children? What are the symptoms of food intolerances? Are certain foods more commonly tolerated than others? Can food allergies be avoided? If so, how? For those children who have food allergies or intolerances, how can parents adjust the children's diets and make certain that the diets are nutritionally adequate?

Have students interview parents of infants or young children. Students should ask the parents the following questions: Does

[B] = Basic Skill Reinforcement

your child have any food intolerances? Do you practice any special procedures when introducing new foods to your child? If so, how are new foods introduced to your child? Are you aware of symptoms of food intolerances? How can food intolerances be handled? After the interviews, have students present their reports to the class.[B] [C]

2. Child and teen
   a. Sources of nutrition information for young children

Introduce a class research project by asking students if they can remember television commercials for food products which made them especially hungry for the foods because of the time of day of the advertisement or how the food product was shown. Ask students to give examples of food products for which the advertising is directed toward children. Explain how television advertising is directed toward making these foods appealing to children. Have the class design a research project to examine how certain foods are advertised on television for children. This project might be group directed allowing the students to elect their own research director and make decisions about how to conduct the research, with the teacher acting in an advisory role and the research director assigning tasks to individuals or small investigatory teams.[C]

As an enrichment experience, have the students develop a table or chart to track the number of commercials and type of foods such as sugared cereals, carbonated beverages, candy, or gum, which are advertised during a particular time/day periods. Students who have a home videotape recorder could be assigned to record a series of 30 or 60 second commercials which illustrate certain kinds of marketing strategies and could be shown to the class during an oral report. Have students prepare a written report summarizing the conclusions they have reached about the advertising for food products which attempts to reach the parents who buy the products by appealing to their children. Evaluate the written and oral reports on the basis of content and effective written and oral communication skills.[B] [C]

Have groups of students develop short (five minute) nutrition lessons for a group of four and five year old children. The lesson should incorporate hand puppets, music, or colorful pictures which would appeal to children. If possible, have the groups teach the lesson to children in an elementary school or a child care center. If children are not available, have students present the lessons in class or for individual children at home. After lessons have been presented, lead a class discussion about how well children learned the nutrition information and how they responded to the lessons.

[B] = Basic Skill Reinforcement

[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Divide the class into groups to develop the content of an informative computer software program on nutrition that appeals to young children. Have the students name the software program and present it to the class. NOTE: Have students select an age grouping of children, develop appropriate nutrition program content for the identified age grouping, develop age appropriate activities, and use color and artistic principles appealing to the children. KEY QUESTION: What nutrition information could children learn as a result of using the nutrition software program developed in class?
b. Growth spurts and nutritional needs	Have students study resources on the nutritional requirements during growth periods, particularly in relation to the adolescent growth period. During the adolescent growth period, most teens are active physically and require many calories for energy. KEY QUESTIONS: What are the recommended caloric allowances for males and females during adolescence? How do the requirements change over time?[B]
	Have students study resources and develop a time line for growth spurts. Lead a class discussion on increased nutritional needs during periods of increased growth. KEY QUESTIONS: Are there specific times when additional calories may be required? What foods might be included in the diet to meet the increased nutritional needs? How can the additional calories for growth be met without ultimately resulting in weight gain?
	Invite the owner or manager of a child care center or school food service director to class to speak on meals and/or snack foods served in child care centers and/or school cafeterias. Have students prepare questions to ask the speaker. KEY QUESTIONS: Who plans the meals and prepares the food? What are the sizes of servings? How are the children encouraged to eat a variety of foods? What guidelines for food service do child care centers or school cafeterias have to follow under licensing standards? What are some examples of snacks and breakfast or lunch menus that are served to children? CRITICAL QUESTION: How are menus different from one age grouping to another age grouping of children?[C]
	Review Teaching Aid 11, Serving Sizes for Children, Teens, and Adults. Lead a class discussion regarding the differences in recommended food serving sizes for different age groups. KEY QUESTIONS: How do food servings vary from one age group to another age group? Why are recommendations for food serving sizes different for different age groups?

[B] = Basic Skill Reinforcement

[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
c. Nutritional demands of teen pregnancy	Lead a class discussion on the nutritional demands that occur when teenagers who are still in a growth and development period become pregnant. KEY QUESTIONS: What special dietary adjustments are necessary to provide adequate nutrition for the teen mother and the developing infant? What nutritional differences might be encountered for a pregnant teenager age 14 compared to one age 17? As an enrichment experience, have students view audiovisuals on nutrition and nutritional requirements for teenagers and teenagers with special needs, such as teenage pregnancy. KEY QUESTIONS: How do the nutritional requirements of pregnant teenagers differ from other teenagers? Why do the nutritional requirements differ? If the diet of a teenager is not changed during pregnancy to compensate for the pregnancy, what might be the potential effects upon the teenager and/or the unborn child?
3. Adults a. Changing energy requirements throughout adulthood	Have students examine Recommended Dietary Allowances to determine nutritional needs during adulthood, particularly in regards to energy intake. Explain the relevance of planning nutrient dense meals to account for the decreasing energy requirements of older adults, while still maintaining adequate levels of other nutrients. In relation to the recommended caloric intake, lead a class discussion on the requirements of adult women and men. NOTE: Recommendations change with age and men require about 20 percent more calories than women in the same age group. KEY QUESTIONS: Why is there a difference in calorie requirements? How can the difference in caloric needs be met in planning family meals? Present information on activity levels and caloric requirements for adults. Have students plan a daily menu based on a specified activity level and caloric requirement for an adult they know.
b. Restricted food intake among the elderly	Present a lecture on the special nutritional needs of the elderly including fewer calories, more frequent meals, soft foods for people with dental problems, and mildly seasoned foods for elderly people with digestive problems, poor appetite, and other special problems. KEY QUESTION: How do the special nutritional needs of the elderly affect their nutritional status and/or contribute to nutritional deficiencies? Have students call or visit with a dietitian who has knowledge of the special dietary needs of the elderly and report findings to the class. KEY QUESTIONS: What special needs are considered when planning and/or preparing meals for the elderly? What situations do some elderly people have which contribute to not

eating a healthy diet? How can elderly people who are uninterested in eating be encouraged to eat healthy foods?[C]

Lead a class discussion to identify local services that are available to assist the elderly with meals. KEY QUESTIONS: What federal, state, and local programs provide aid to citizens who are on fixed and limited incomes? What specific services are provided by the programs? What are the advantages and disadvantages of the programs? How have the programs influenced nutritional adequacy for the elderly and/or improved their quality of life? How can volunteers be involved in such programs?

D. Nutrition and long-term effects
   1. Food Choices
   2. Relationship of disease and food choices

NOTE: The content identified in competency I.D. is appropriate to be taught simultaneously with competency IV.A. of this course. Competency IV.C. maybe taught following competencies I.D. and IV.A.

Have students analyze their current dietary patterns to determine the nutritional adequacy of their diets KEY QUESTIONS: What nutrients are lacking in the current diet? If the nutrients continue to be omitted, what are the potential effects on future health? What diet changes can be made to correct dietary problems? At what point in life do people form dietary habits? How do people form dietary habits? What are some examples of dietary habits that people form? How can poor dietary habits be changed?

a. Obesity and other extremes

Have students obtain information on nutrition related to obesity. Check out publications for the class to review and evaluate. KEY QUESTIONS: What is obesity? What health risks are associated with obesity? What dietary means assist in preventing obesity? What can be done for those who are obese? What special diet programs could assist in maintaining ideal weight?[B]

Have students read reference materials on anorexia nervosa and bulimia. Lead a discussion in class on what the disorders are, how they begin, who usually gets the disorders, the short-term and long-term psychological and physical impacts upon the human body, and how the disorders impact food choices and nutritional well-being of people. Also, focus on information regarding treatment available for people with these eating disorders. KEY QUESTIONS: What are the symptoms of anorexia nervosa and bulimia? What should be done if you suspect a friend has one of these conditions?[B]

b. Diabetes

Present information on diabetes to the class. Discuss in class topics such as the exchange diet, related health problems,

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[B] = Basic Skill Reinforcement

medication for control of the disorder, the role of heredity in developing diabetes, exercise, rest, dangers of not controlling the disease, and means of living a normal life with the disease.[B]

Ask students if any member of their family or someone they know has diabetes. Have those students who are familiar with the disease present information to the class. Have students include information on medical attention required by the person with diabetes, daily nutritional requirements, rest, exercise, medication for control, and other requirements to live a normal life with the disorder.

As an enrichment experience, have students plan and prepare a meal that would be suitable for a diabetic. Provide cookbooks which have been developed for diabetic diets. Relate the meal to a daily plan based on the exchange diet.[C]

c. Osteoporosis

Have students obtain information on osteoporosis from textbooks or library sources. Divide students into groups. Have each group select a chair and reporter. Have students prepare a group report to give to the class. A group may be assigned a specific area of information. KEY QUESTIONS: What is osteoporosis? Who may develop osteoporosis? Can the disease be prevented? How is nutrition related to osteoporosis? If the disease develops, how can it be treated? What is the role of calcium in relation to osteoporosis?[B] [C]

Invite a local physician or resource person to class to discuss what osteoporosis is and its prevention. Have students prepare questions to ask the resource person.

d. Hypertension

As an introduction to the topic of hypertension, obtain an electronic sphygmomanometer or have the school nurse check the blood pressure of the students in the class. Lead a class discussion on hypertension. KEY QUESTIONS: How does an individual's diet affect hypertension? How can this disease be treated? What are the risks associated with hypertension? How is sodium related to hypertension? In addition to diet, what other factors affect hypertension?[B]

Lead a class discussion on Teaching Aid 12, Case Studies on Stress and Diet. Have students use the Daily Food Guide to plan suitable menus for Nancy and Joe considering their ages and levels of activity. KEY QUESTIONS: What suggestions should be made for Nancy and Joe in relation to their lifestyles and diets? Why should they change their present habits? If the present habits

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are not changed, what are the potential long-term effects or damages for Nancy and Joe?

After students have read resources on stress and nutrition, lead a class discussion on nutrition and stress. KEY QUESTIONS: How does stress influence the quantity of foods consumed by people? What are the potential short-term and long-term effects of the quantities consumed? Does stress influence the effectiveness of the digestive process and/or metabolism? How does stress influence the effectiveness of the digestive process? How does stress influence caloric intake? What are the implications of prolonged stress on the human body? What are the implications of prolonged stress on nutritional adequacy and well-being?

e. Heart disease

Have students review materials on heart disease from the American Heart Association or other reliable sources. Lead a class discussion on the information or have the students read the literature and report to the class. KEY QUESTIONS: What is coronary heart disease? What is the role of diet in the disease? What are the causes of the disease? What nutritional guidelines are suggested for those with the disease? Can the disease be prevented and/or controlled with diet? What risks are associated with the disease? Do women have heart disease? Does a young child or teenager's diet affect the tendency to develop heart disease?

Have students read resource materials and write a report on the role of nutrition throughout life in relation to heart disease. The report should focus on guidelines to follow throughout life. Have students present their findings to the class.[B]

As an FHA/HERO activity or class enrichment activity, have students prepare foods that are healthy for the heart and place them in the teacher workroom for the administrators, teachers, and staff. Provide recipes for the foods.

Have students look for articles in newspapers and magazines regarding heart disease and nutrition. Ask students to bring the articles to class and analyze the accuracy of the nutrition information.

f. Other conditions

Have each student choose a medical condition requiring a special diet as a research topic. Students should locate and study reliable information regarding the special dietary requirements for each condition considered. After research, have each student make an oral report to the class. Topic examples might include: migraine headaches, allergies, ulcers, diverticulosis, and other medical conditions.[B]

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Invite a local physician to class to discuss the role of nutrition as it relates to migraine headaches, allergies, ulcers, diverticulosis, and other health problems. Have the students prepare questions in advance to ask the resource person.
E. Dietary planning 1. Recommended dietary allowances 2. National dietary goals and guidelines 3. Food guides in dietary planning	NOTE: The content identified in competency I.E. may be taught prior to competency I.H. of this unit. Have students view Teaching Aid 13, Dietary Guidelines, and Teaching Aid 14, Daily Food Guide. Lead a class discussion on the three common dietary guidelines: Recommended Dietary Allowances, National Dietary Guidelines for Americans, and Food Guides in Dietary Planning. After defining and discussing the guidelines, draw a chart on the chalkboard to identify the pros and cons of each plan. Compare and analyze the nutritional adequacy and the ease following each of the plans. KEY QUESTIONS: What are the similarities and differences in the three plans? Which plan would be easiest to follow? Is one plan more nutritionally adequate than another? Which plan would people most likely follow? NOTE: A good reference for fact sheets on dietary planning and an additional source of suggested learning activities is *The New Nutrition* Teacher's Guide and Student's Guide, Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas. Refer to the sections in these guides on Daily Food Guide and Recommended Dietary Allowances. Have students plan a three day menu based on Recommended Dietary Allowances, on the National Dietary Guidelines, and on the Food Guides in Dietary Planning. KEY QUESTIONS: Which guidelines were easiest to follow in planning the menus? Are the menus similar? Could an individual's menu be the same following different plans? What are the advantages and disadvantages of each plan?
F. Nutritional adequacy 1. Dietary analysis	NOTE: The content identified in competency I.F. may be taught prior to competency I.C. of this unit. Have students analyze their daily diets. Have each student analyze a one day food intake. Lead a class discussion on the findings from the analysis. NOTE: The dietary analysis computer program can be used to analyze diets planned for individuals of various ages and/or persons who are on special diets. KEY QUESTIONS: How did each student's daily intake meet the nutritional requirements? What foods could have been eaten that would have improved the nutritional adequacy?[B]

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Have students verify the nutritional adequacy of selected diets for individuals with special needs such as the elderly, a young child, a pregnant woman, and a person with hypertension or heart disease. Show how meals can be modified to meet special needs of individual family members.[C]
2. Adequacy of other selected diets	Obtain current or popular diets and diet books. Have students divide into groups and choose one of the plans to analyze the advantages, disadvantages, dangers, and nutritional adequacy of the diet. Determine the nutritional adequacy by using a suggested daily menu for the diet and determining how it meets the requirements of the Recommended Daily Allowance (RDA) or the Daily Food Guide. The menu could be analyzed using a dietary analysis computer program. Present the information to the class.[C]
	Have students identify and analyze fad diets. KEY QUESTIONS: Are the diets balanced? What additional nutrients are needed on a daily basis? What are the implications for long-term use of the diet? Will the diet do what it claims?
	Have students divide into groups and plan a weekly menu that would enhance weight loss. The dietary weight loss plan should be based on the Daily Food Guide to assure adequate nutrient intake but be reasonably restricted in calories.
	Provide students copies of weight loss and weight gain menus. Have students evaluate the menus for nutrition adequacy. KEY QUESTIONS: What are the major differences in the menus? Are the menus nutritionally adequate?
	Using references, have students define the term *vegetarian* and describe the different types of vegetarians and their diets. Present information to the class on vegetarian diets regarding differences in complete and incomplete proteins. KEY QUESTIONS: Can a vegetarian diet be nutritionally adequate? How can a vegetarian plan to meet nutritional requirements? Why should a vegetarian take care to insure that adequate protein is included in his/her diet?
	Have students study resources to find information regarding the lacto vegetarian diet. KEY QUESTIONS: What foods are included in this diet? Which food group is not included?
	Have students define the term *lacto-ovo-vegetarian* and study resources on it. KEY QUESTIONS: What foods are included in this diet? Is this a popular type of diet? Is this diet more or less difficult to balance than other types of vegetarian diets?

[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Divide the class into groups. Have each group plan a balanced one day menu for a lacto-ovo-vegetarian and a one day menu as data for a computer program. After each group selects a group leader and a recorder, have each group report on the menus planned and the result of the dietary analysis. If the menus failed to meet daily dietary requirements, have the students adjust the menus so that the requirements are met.[C]
	Invite a dietitian or other resource person to speak to the class, or have students read resources, on strict vegetarian and other vegetarian diets. KEY QUESTIONS: How can the vegetarian diet provide enough protein, calcium,and other nutrients? What foods can be combined to make incomplete proteins into complete proteins?[B]
	Have students plan a well-balanced one day menu for a person on a strict vegetarian or vegetarian diet. KEY QUESTIONS: Is it difficult to plan this type of menu? Why or why not? Which of the three vegetarian diets is the most difficult to plan for well-balanced nutrition? Is variety difficult to achieve? Which vegetarian diet could be dangerous if the person planning the meals was not well-informed in nutrition?
G. Food intake and health 1. Family eating patterns	NOTE: The content identified in competency I.G. is appropriate to be taught after competency IV.B. of this course. Competency IV.D. may be taught following competency I.G.
	Survey the class to determine how many families follow the traditional three meals a day meal pattern. Have the students divide into groups according to their meal patterns. For example, one group might be those students whose families eat only lunch and dinner, another group might be those students whose families never actually eat meals, but snack most of the day. Have each group discuss how their families meet their nutritional requirements with their particular meal patterns. KEY QUESTIONS: Does the meal pattern allow for adequate nutrition? How does the meal pattern differ from the traditional three meals a day? Is there a need for three meals a day? What factors influence family eating patterns?
	Lead a class discussion on whether the views on nutrition held by a family unit have an impact on individual family members. CRITICAL QUESTIONS: Do the family unit's views on nutrition impact individual family members? Why or why not? How do you think your family's views on nutrition have affected your food habits?

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
2. Nutrition at school and away from home	Have students use the Daily Food Guide as a basis to plan menus for lunch either in the school cafeteria or a sack lunch. Develop a checklist or have students create a chart to evaluate the adequacy of the planned lunch in meeting the nutritional recommendations from the Daily Food Guide. Have student read resources on establishing positive food and eating habits. Lead a class discussion on when and how children learn eating and food habits. Include information on how parents and other adults can help children establish positive attitudes toward eating and food habits. KEY QUESTIONS: What methods can parents and other adults use to encourage children to have good eating and food habits? What positive food and eating habits should children be encouraged to develop? What can parents and other adults do to help children correct poor eating and food habits? If poor eating and food habits are not corrected, what are the potential short-term and long-term effects of those poor eating and food habits on the child? How might the long-term effects influence future health costs, worker productivity, and quality of life? [B] Lead a class discussion on the food habits of teens. KEY QUESTIONS: Do teenagers eat more fast foods than the average adult? Do teenagers tend to eat many snack foods? How concerned are teenagers with weight and appearance? What effect can fast foods and snack foods have on achieving a balanced diet with adequate nutrition? Instruct students to study articles and advertisements on the nutritional value of different foods from various fast-food restaurants. KEY QUESTIONS: What were the findings? Is the nutrition adequate for energy and development? Were the articles biased or factual? Are there differences in the nutritional value of foods from different fast-food restaurants? Have students make a chart comparing the cost, calories, and nutritive value of foods that may be bought in fast-food restaurants. Share the chart with the class and lead a discussion on the findings. Include in the discussion information on how to eat smart.[B] Have students plan a one day menu for a 17-year-old male and a 17-year-old female which will provide an adequate number of calories and adequate nutrition. Include snacks in the menu and plan on each individual eating at least one meal away from home. Use information from the Recommended Daily Allowances (RDA).

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
H. Nutritional information reliability 1. Sources of nutrition information 2. Bases for reliability of nutrition information	NOTE: The content identified in competency I.H. may be taught prior to competency I.I. of this text. Lead a class discussion regarding reliable sources for nutrition information. Have students review magazines, newspapers, and books to determine the content of articles printed on the topic of nutrition. Have them bring examples to class. Lead a class discussion on the articles. KEY QUESTIONS: What scientific information is the article based on? Is the information reliable? Why or why not? Have students develop guidelines for judging the reliability of articles in current magazines and newspapers relating to nutrition. Suggestions might include the following: author has reliable credentials; sound research is cited; research was funded by a governmental agency rather than a commercial firm. Have the students suggest criteria and develop a checklist which could be used to examine the reliability of the information provided in articles. Utilizing a checklist established to judge the reliability of nutrition articles, have students locate an article in a magazine or the newspaper and analyze the information according to the guidelines. Have students prepare a report to present to the class. Evaluate the students' reports on the basis of content and effective communication.[B]
I. Food fads, fallacies, and facts 1. Common beliefs and practices 2. Misinformation in media and popular literature	NOTE: The content identified in competency I.I. may be taught prior to competency I.F. of this unit. Ask students to interview parents, grandparents, or other adult relatives or friends to ask them questions about nutrition that may uncover some of the misconceptions that many people have. Some questions might focus on weight loss, on cholesterol consumption, on eating red meat and other topics. Have students report their findings to the class.[C] Have students watch television for at least one hour per day for several days. Have them record examples of programs, news reports, and advertisements related to food and nutrition. Lead a class discussion on the television information viewed by students in relation to its accuracy. KEY QUESTION: How accurate was the information viewed? Ask students to obtain at least two articles from current magazines that contain nutrition information. One article should be accurate

[B] = Basic Skill Reinforcement
[C] = Common Essential Element

and the other inaccurate in its claims. Lead a class discussion on the articles and have students give their reasons for determining accuracy or inaccuracy.

Have students ask adults in the community and/or read resources or popular literature to identify and get information about some of the popular weight reduction and weight increase diets. Lead a class discussion on the advantages and disadvantages of the weight reduction and weight increase diets. Evaluate the diets on nutritional adequacy; reliability; costs; length of time to practice the diets; potential short-term and long-term health problems; weight maintenance; potential positive and negative physical, psychological, and social effects of the diet; and misleading information or implications about the diets. Also, evaluate the diets in reference to palatability and other health claims made for using the diets other than weight gain or reduction. For example, a diet may claim to reduce weight an and control cholesterol levels. Examine the diets for quality and source of nutrients and calories. For example, decide if the calorie reduction is a result of the decreases in fat consumption, carbohydrate consumption, or total food consumption. Also, determine if the diet has the major source of calories being derived from fat, carbohydrates, or protein. Have students evaluate the accuracy or inaccuracy of the diets.

TAC 75.83
FOOD SCIENCE AND NUTRITION
UNIT II

COMPETENCY: (i.2) *Concepts and skills related to the cultural influence on food and nutrition.*

SUB-COMPETENCIES: (A) *Compare cultural influences on individual and family food options.*

(B) *Analyze nutritional adequacy of diets representative of different cultures.*

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
II. Cultural influences on food and nutrition A. Individual and family food options 1. Availability and acceptability of food	NOTE: Use Teaching Aid 15, Planning Food and Nutrition Laboratories, as a guideline for advance preparation of laboratory experiences which are suggested throughout the curriculum guide. Lead a class discussion on the availability of foods as a determining factor in food choices. Describe the availability of foods in the United States compared to other countries. Point out the wide variety of foods available in the United States and even the variety of foods that are representative of other countries. Divide the class into teams. Assign each team an ethnic menu to plan such as Italian, Mexican, and Chinese. Ask each team to develop a shopping list for the food items needed. Have the class visit supermarkets or determine the availability of the foods needed. Using the menus developed in the previous activity, have each student conduct a research study to determine which ethnic menu is most popular in their local community. The student should ask at least 10 individuals to rate each menu item in relation to preference. The survey also might ask individuals to identify their favorite choice from the menus given. The persons surveyed should include adults as well as classmates. Have the class tabulate the survey results to determine acceptable ethnic foods. KEY QUESTIONS: Why are ethnic foods popular? How willing are people to accept ethnic foods? How does ethnic food popularity vary from one section of the country to another? What are some examples?[B] [C] As an enrichment experience or Student Occupational Activity, have students prepare an ethnic menu that is not familiar to them.

[B] = Basic Skill Reinforcement
[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Lead a class discussion on meals prepared by students and their preferences for new ethnic foods.
2. Food customs	Lead a class discussion on the role of culture, ethnicity, tradition, religion, and social status in reference to food selecting meal patterns and eating habits. KEY QUESTIONS: How does a person's culture, ethnic background, religion, family traditions, and social status influence the individual's choices of foods, eating habits, and meal patterns? What cultural or religious significances are associated with some foods? What is a food symbol? What groups use foods as symbols?
	Have students write a report on the customs which their families observe in relation to food. For example, many families often have traditional meals at holidays, such as Thanksgiving. Share the reports with the class. Evaluate reports on the basis of good communication skills and content. KEY QUESTIONS: When does your family prepare special meals? What types of foods are traditionally served? How do families use foods as traditions?[B]
	Ask students to identify and list food customs associated with their own families. Have students compare their lists to determine which ones are similar and which ones are different. KEY QUESTIONS: Where have some of the customs associated with foods originated? Why do people continue to observe the customs? How are the various customs observed? Are foods an important part of the customs? What functions do foods play in the American society and in families? How has technology affected food customs?
	Ask students to identify friends or classmates that may be from other countries. Have students interview them to determine food customs that they may observe and prepare a written report to present to the class.[B]
	Have students read references that identify and provide information on the influence of regionalism or geographic habitation in the United States on food availability, food costs, and food choices. Have the students share their findings with the class. Lead a class discussion on the relationship of regionalism or geographic locations on food choices, food costs, and food availability. NOTE: Emphasize that the geographic region of the country or the city in which an individual lives has an influence on what foods are available for consumption, when certain foods are available, the costs of foods in that city or region, and the foods commonly consumed in a particular areas. For example, Mexican foods are popular in the southwestern portion of the United States,

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	barbecue is popular in Texas, and fresh seafoods are popular along the Texas coastal areas. KEY QUESTIONS: How does the geographic location in which one resides impact on the cost of foods and food products? What are some examples of effects of geographic location on costs of foods? How does the geographic location in which one resides influence food choices? What are some examples? What is the relationship between food availability and geographic residence?
B. Nutritional adequacy of diets representative of different cultures 1. Food choices and meal patterns in different cultures	Have students secure information on foods and meal patterns of other geographic regions, cultures, and/or ethnic groups. Attempt to obtain not only descriptions of the foods, but also locate cookbooks that may be appropriate. In class, prepare a chart that analyzes the nutritional adequacy of the diets. For example, use the Daily Food Guide and determine how each country, geographic region, or ethnic group includes each of the food groups in their diet. Have students plan and prepare a nutritious meal that would be representative of a different geographic region, country, or ethnic group. Possibly choose breakfast as the meal since it may be particularly unique. Determine the cost of the meal and the cost per person.[B]
2. Sources of essential nutrients in diets of various cultures	Have students view Teaching Aid 16, Cultural Food Habits. Lead a class discussion on the types of food most often eaten in the various cultures represented. Evaluate the basic food identified to determine what possible nutritional deficiencies may exist for a given culture if the indicated diets are not regularly supplemented with other foods from the Daily Food Guide. KEY QUESTIONS: What nutrients are deficient in the average diets of given cultures? What other foods from the Daily Food Guide must be added to the typical diets of given cultures to provide balanced diets and adequate nutrition? How easy would it be for most people to supplement their cultural diets with other foods from the Daily Food Guide to make balanced diets? If the diets are not supplemented with other foods from the Daily Food Guide, what might the short-term and long-term effects of nutritional deficiencies be? How might nutritional deficiencies affect the human body? Have students prepare examples of various cultural menus using the Daily Food Guide as a reference to evaluate the nutritional adequacy of the sample menus. KEY QUESTIONS: Do the menus provide adequate nutrient intake? How can menus be improved to meet nutrient requirements?[B] [C]

[B] = Basic Skill Reinforcement

[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
3. Nutritional awareness	Lead a class discussion on the ways that technology has contributed to increasing nutritional awareness. NOTE: Include both positive and negative influences of technology on nutritional awareness and nutritional adequacy of individual's diets in the United States and in other countries. KEY QUESTIONS: How has the mass media increased an awareness of nutrition? What are some ways that scientific research results in increased nutritional awareness? How have new inventions increased an awareness of nutrition? How are developing and underdeveloped countries affected because of the lack of reliable sources of nutrition information? What are ways technology has improved nutritional awareness and adequate nutrition for citizens? What are some examples? What are ways that technology may contribute toward decreasing the nutritional adequacy of diets? What are some examples?

TAC 75.83
FOOD SCIENCE AND NUTRITION
UNIT III

COMPETENCY: (i.3) *Concepts and skills related to management.*

SUB-COMPETENCIES:

(A) *Apply principles of consumerism.*

(B) *Apply management skills in meeting daily food needs.*

(C) *Relate the effects of work space and equipment on meal preparation.*

(D) *Apply safety and sanitation procedures in food preparation tasks.*

(E) *Prepare nutritious meals appropriate for families and other groups.*

(F) *Plan nutritious diets to meet various budgetary needs.*

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
III. Management skills A. Principles of consumerism 1. Food purchasing	Have the class identify where families may shop for food. List the types of stores or businesses on a chart or the chalkboard, and determine the advantages and disadvantages of each type of business. Types of food markets or businesses might include supermarkets, local grocery stores, convenience stores, discount grocery stores, roadside vendors, and thrift stores. KEY QUESTIONS: What differences are there in these stores or businesses? Why would a consumer choose to shop at a particular store or business? How do cost, selection, and convenience relate to the stores or businesses? As a class, compare various qualities of products, such as name brand manufacturers to generic brands. Items to compare might include canned, frozen, dehydrated, or irradiated foods. Compare the products for cost, taste, nutritional quality, appearance, and overall acceptability. Make a chart or poster to illustrate the findings.[B] Have the students conduct a laboratory experience to evaluate convenience products designed to save time, energy, and money. Use a selection of foods which may be purchased partially prepared and/or ready to serve and foods which are prepared at home. Compare the products for quality. Example products might include: macaroni and cheese, pot pie, lasagna, and muffins. KEY

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	QUESTIONS: What are the differences and similarities in quality of the products? What contributes to the quality differences if there are any differences? What might be done to improve overall product quality?[C]
	Lead a class discussion on the impact of technology on the types, selections, quantity, quality, and costs of foods and food products available to consumers. KEY QUESTIONS: What are some food products that are available as a result of technology? What are some examples in which technology might decrease the cost of certain foods and in other cases increase the cost of foods? How has technology added conveniences for the consumer to the foods that are available? How do the built-in conveniences for consumers impact food prices?
	As an enrichment experience or Student Occupational Activity, have students, individually or in groups, prepare articles comparing different brands of a food type which could be included in a publication. If groups are formed, have each group elect a group leader and make leadership assignments. Evaluate students' articles on the basis of content and effective written communication.[B] [C]
a. Influences of advertising and marketing on food choices	Divide the class into groups, and have groups identify factors that make food advertisements useful. Lead a class discussion addressing the identified factors. Examples include information about the product, appeal of the product, and/or factual price information.[C]
	Have students view food advertisements in magazines and newspapers, or describe examples of advertisements seen on television or heard on radio. Lead a class discussion on ways advertisements are designed to appeal to the consumer. Examples include use of color and eye appeal, samples to taste, auditory effects, and smell.
	As a Student Occupational Activity, have students conduct a survey of supermarket managers and homemakers to determine the effects of advertising on food buying practices. Report the results to the class. KEY QUESTIONS: How does advertising affect food sales? Are advertisements used to determine food purchases? Why or why not?[C]
	Have students view examples of food advertisements found in newspapers and magazines. Examine the advertisements and determine if any contain possible misleading information. As a

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

follow-up activity, have students prepare a bulletin board or display on misleading information in food advertisements.

Working in groups, have students describe examples of advertising they have seen which could be considered deceptive or misleading. Have each group choose a leader and recorder. The following advertising examples could be used:

1) A store lists a special price of three for $1 when the regular price is 33¢.
2) Cereal may imply that children become athletes after eating the cereal when the cereal has no actual relationship to athletic ability.
3) Some potato chip packages imply that the product is highly nutritious.[C]

Using resource materials, have students locate articles on the marketing techniques used by supermarkets to increase sales of specific items. Examples include the following: items placed on the center shelf move faster than those on the bottom shelf and one item may be located in several places in the store. On the next visit to a supermarket, have students identify the marketing techniques being used. Report to the class. KEY QUESTIONS: Are the most popular purchases in the most convenient display locations? How do store managers determine which items to place in the various display locations? CRITICAL QUESTIONS: Are these same principles followed in the marketing of other items, such as clothing? If so, what are some examples observed by class members?

Have the students read resources on unit pricing and price comparisons. Given a variety of food items, weights/servings, and prices, have students demonstrate computing unit price or price per serving. KEY QUESTIONS: How can unit pricing aid the food shopper in determining which product is the best buy? Is the least expensive product always the best buy? Why or why not? Why should some products be compared by number of servings rather than unit price? What are computerized shelf labels? How can they aid in making comparisons? How can the shopper determine the best buy when these aids are not available?[B]

As a Student Occupational Activity or enrichment experience, have students visit food stores in their area. Compare the prices of different brands of several products such as green beans, cornflakes, flour, or dishwashing liquid using the aids provided. Make the same comparisons by using hand calculations. Report the results to the class. KEY QUESTIONS: Which stores provide

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[C] = Common Essential Element
[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	aids for making price comparisons? Are the aids kept up-to-date? What problems were encountered when making comparisons?
b. Label information	Have students study references to determine what information is required by law on food product labels. KEY QUESTIONS: What information is included at the manufacturers' option? What label information is required by law?[B]
	Have students view Teaching Aid 17, Food Labels, to gain information on parts of a food product label. Have students practice locating food product label parts using different food containers. NOTE: Parts to be identified include price, product name, product illustration, Universal Product Code, manufacturer's name and address, net weight, nutrition information, and ingredients.
	Have students study the list of ingredients on a food product label. Note that the ingredients are listed by weight in descending order. For example, the listing water, sugar, and flavoring indicates that the main ingredient is water and that the amount of sugar is greater than the amount of flavoring. KEY QUESTION: Why would this information be valuable to a consumer?
	Have students read resources on standards of identity. Identify some foods which have a standard of identity. KEY QUESTION: What are the reasons that ingredients do not have to be listed on these food items?[B]
	Instruct students to read references and then view audiovisuals on food inspection and grades of meat, poultry, fish, eggs, fruits, and vegetables. Use Teaching Aid 18, USDA Grade Labels, as a reference. Have students look up the nutritive value of different grades of foods. KEY QUESTIONS: Does the grade affect the nutritive value? What would this mean in terms of planning family meals on a limited budget?
c. Shopping practices and techniques	Divide the class into groups. Assign each group a particular lifestyle, and have them discuss how lifestyles can influence shopping practices. Use the following cases: 1) College student living in an apartment 2) Elderly person living alone on a fixed income 3) Family of four with two preschool children, both parents work 4) Young career couple 5) Family with two teenagers, only one parent works 6) Retired couple living on fixed income, one person has hypertension

[B] = Basic Skill Reinforcement

7) Orthopedically handicapped career person with limited use of arms and hands
8) Family of six (two teenagers, one middle school student, and one preschooler), one parent and one teenager are diabetic, both parents work

KEY QUESTIONS: How does life style affect shopping practices? Would one shopping method be more appropriate than another for different family situations?[C]

Have students study resources to find information on shopping trends such as using coupons, cooperatives, bartering, and/or generic foods. Lead a class discussion on information gathered by students. KEY QUESTIONS: Do coupons ultimately save the consumer money? Why or why not? To save funds through the cooperative method, how might a family of two utilize purchasing cooperatives? Is bartering common in the community? Why or why not? Can generic products be found for most foods? Is there a savings? Why or why not?[B]

As an enrichment experience or Student Occupational Activity, have students interview shoppers to determine how many use coupons or select stores because of stamps or other promotions. Identify some promotions currently being used by stores. Students should report findings to the class. KEY QUESTIONS: Do shoppers feel that these promotions add to the cost of food? Why or why not?

Divide the class into groups, and have the students identify shopping techniques that can make shopping easier and more efficient. Examples include the following:

1) Shop with a list.
2) Shop only once a week or less.
3) Shop without children if possible.
4) Shop after eating, not when hungry.

Lead a class discussion on the advantages and disadvantages of each shopping technique.[C]

As an enrichment experience, have students divide into groups and examine generic foods, store brand foods, and some national brand foods in categories such as cereal products or canned goods. Open the foods to examine and compare the contents. Prepare or sample three different brands of one product. KEY QUESTIONS: What is the difference in price among the three types of foods? What is the difference in packaging? Are there factors other than price that may influence consumers to purchase certain food products? If so, what are they?[C]

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	As an enrichment experience, have students find a product that offers a refund for proof-of-purchase. Instruct students to send in the required cents-off coupon labels or other required information, and keep a record of the date the refund was requested and when it was received. Have students report findings to the class. KEY QUESTIONS: How long did it take? How much does the consumer really save? Was it worth the time, effort, and cost? Will more refund opportunities be sought in the future?
	Have students view Teaching Aid 19, Universal Product Code and Cash Register Tape. Identify the various information provided by the Universal Product Code. Study the sample computer tape. Lead a class discussion on ways the supermarket uses this information. KEY QUESTIONS: What information is included that is not on a regular cash register tape? How can the computer tape information be helpful to the consumer? Will this method be more common in the future? Why or why not?
	Invite a local grocer to class to discuss the computer check-out method which utilizes the Universal Product Code. KEY QUESTIONS: How many stores use this check-out method? Why was the method established? Will this method be more common in the future? Why or why not?
d. Eating away from home	Have students conduct a survey of individuals of different ages to determine their concept of eating away from home and their habits. The survey should include items such as how often the person eats out per week, choice of restaurants or eating establishments, and approximate cost. Have students compile the data in chart form. KEY QUESTIONS: Why do people eat away from home? Is it true that eating out is more costly than eating at home? Why or why not? If the cost is more, are there justifications for any additional expenditures?[B]
	Lead a class discussion on other forms of eating out such as purchasing prepared take-out foods from a deli, grocery store, or restaurant. KEY QUESTIONS: What are the advantages and disadvantages of the other types of food sources? Why are these sources not usually considered a means of eating away from home?
e. Consumer legislation	Provide students information from the Food and Drug Administration, United States Department of Agriculture, and the United States Government Printing Office on topics related to food and nutrition legislation. Include such laws as those listed on Teaching Aid 20, Examples of Food and Nutrition Legislation. KEY QUESTIONS: What are examples of food and nutrition

[B] = Basic Skill Reinforcement

legislation specific to your state? How does food and nutrition legislation protect or benefit the consumer?

Have students read references on laws related to food science and nutrition that have been passed on the federal or state levels to protect consumers. Identify and lead a class discussion on the various laws.[B]

2. Equipment selection

Have students identify large and small kitchen equipment. Lead a class discussion on why specific pieces of equipment are desirable. KEY QUESTIONS: What features would be desirable in the pieces of equipment? What features should be avoided? Do special equipment features allow for equipment to have multiple uses? Why or why not? What features would require additional care or safety precautions? How do added equipment features affect the equipment cost?[C]

Have students study resources on features of large and small kitchen equipment that should be considered when purchasing the equipment. KEY QUESTIONS: What are reliable sources of information on purchasing large and small kitchen equipment? What features promote time efficiency? What features are desirable to help conserve gas or electricity? What features are desirable to help save a person's physical energy? What features are desirable for aesthetic purposes?

B. Meeting daily food needs
   1. Resource management
      a. Time management

Lead a class discussion on how students' eating habits are affected by lack of time. On the chalkboard, compile a list of factors which influence teenagers' food choices, such as work/school activities that prevent them from getting home to eat with the family or lack of time to prepare meals for themselves, resulting in snacking rather than nutritious eating. Have each student select one factor which is or may be a personal concern. Have the students write paragraphs describing actions which could be taken to assure that foods which provide adequate levels of essential nutrients are included in their daily diets. Evaluate students' papers on the basis of content and effective written communication.[B]

Have students examine the weekly schedule in Teaching Aid 21, David's Work and Activity Schedule. In groups, have students plan a one week menu for David, consisting of a minimum of 12 meals during the week which he would prepare at home. At least one of the meals should be during the week when a couple of friends would eat with him in his apartment. Three additional meals that are prepared at home are carried to work and eaten there. Have students plan periods of time into David's schedule

[B] = Basic Skill Reinforcement
[C] = Common Essential Element

which would allow him to shop for food and do advance preparation for meals to be eaten when he is busy. When the groups complete their menus and schedules, have them total the amount of time for each day and for the entire week to be spent by David in preparing food and cleaning up.[B]

Instruct students to identify recipes or ideas for foods that can be prepared in 30 minutes or less. Plan five meals that can be ready in the time frame. Have students focus on adequate nutrition, aesthetic qualities, and/or food preferences.

As a Student Occupational Activity, have students prepare one of the meals that can be prepared in 30 minutes or less. KEY QUESTIONS: Did it take 30 minutes or less to prepare? How was nutritional adequacy and appearance?

b. Energy management

Present a lecture which focuses on energy and efficiency of a person preparing food. Topics to include might be flexibility and number of hours spent at work, children in the family, help in the preparation process, and organization of work.

Lead a class discussion on the relationship of energy management, time management, and cost. Focus on reasons why energy required to prepare foods might be a more important factor than the cost of an item or the time required to prepare the item. KEY QUESTIONS: What are energy management, time management, and money management? How can one prioritize these factors?

Describe a family situation such as an extended family (mother, father, grandparent, and four children). As a class, discuss what factors influence management of the preparation of the meals. KEY QUESTIONS: What amount of food needs to be prepared? What resources are available for food preparation? Who is or can be involved in the food preparation? How can food preparation be better managed in relation to energy expenditure?

As a laboratory activity, have students compare energy, time, and money management by preparing frozen food, prepackaged food, and foods made from scratch. Food choices might include a fruit cobbler, muffins, or pizza.[B]

C. Work space and equipment in meal preparation

1. Work area arrangement

Divide the class into groups. Provide reference materials for each group so that they can establish ideas for efficient work areas used in meal preparation. Have students define and describe food preparation and storage centers, cooking and serving centers, and cleanup area. Lead a class discussion on the information gathered through group research.[B]

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Have students read selected references to identify efficient arrangements for work centers in kitchens. Define *work triangle*. Name the three major pieces of equipment which make up the work triangle. KEY QUESTIONS: Why is the work triangle an efficient arrangement for the work centers in the kitchen? Why is it recommended that the three sides of the work triangle measure no more than 22 feet?
	Have students view Teaching Aid 22, Kitchen Planning, and lead a class discussion on the basic kitchen shapes, the work triangles illustrated in each, and the arrangement of equipment. KEY QUESTIONS: Which kitchen shape is usually considered the most efficient arrangement? Why? What is the shape of the kitchen in your home? How efficient is it?
	Have students view Teaching Aid 23, Kitchen Storage, to gain a better understanding of planning the storage space in kitchen work areas. Lead a class discussion on why items used everyday should be stored close at hand, preferably in the area between waist and eye level. Lead a follow-up discussion regarding storage factors to consider when planning a kitchen for a person in a wheelchair or a person walking with crutches or a cane. KEY QUESTIONS: What should be stored in the dead storage height above the head and in deep corners? Where should items such as holiday pans and dishes, fondue pots, large roasters, and canning equipment be stored?
	Have students work with partners to find pictures of poorly designed kitchens and well planned kitchens. Groups should show illustrations and report findings to the class. KEY QUESTIONS: Would it be easy or difficult to work in these kitchens? Would the kitchens be appropriate for more than one person? What kinds of things should one look for when thinking about how to prepare food in a kitchen? How do the following factors affect food preparation: storage areas, counter space, traffic patterns, height of counters and cabinets, lighting, ease of cleaning, refrigerator, sink, dishwasher, space for small equipment, ability for clean up, and number of people working in the kitchen?[C]
2. Use and care of equipment and tools	Instruct students to read resources on the use, care, and safe operation of large and small equipment and tools. Divide the class into groups to demonstrate use, care and safe operation of large equipment. Lead a class discussion on the use and care of large equipment. KEY QUESTIONS: What safety precautions should be taken in the use and care of large and small kitchen equipment? How are the pieces energy efficient?[C]

[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Divide the class into groups to demonstrate use, care, and safety procedures to observe related to small equipment. Lead a class discussion on the use and care of small equipment. KEY QUESTIONS: What safety precautions should be taken in the use and care of small kitchen equipment? How are the pieces energy efficient?[C]
	Divide the class into groups to demonstrate use, care, and safety procedures to observe related to kitchen tools. Lead a class discussion on the use and care of kitchen tools. KEY QUESTIONS: What safety precautions should be taken in the use and care of kitchen tools? How are the pieces of equipment energy efficient? What accidents can result from unsafe use of kitchen tools?[C]
	Have students read resources, demonstrate, and discuss the features, use, safe operation, and care of small equipment. Examples might include a microwave oven, food processor, electric skillet, pressure cooker, and mixer. Refer to Teaching Aid 24, Food Processor, as an illustration of items to demonstrate. NOTE: Nonhuman energy conservation should be emphasized here. KEY QUESTIONS: What are the advantages and disadvantages of each piece of small equipment? What safety practices should be observed during the use and care of the small appliances? Is a small appliance more energy efficient than a large appliance? Why or why not?[B]
	Have students view audiovisuals on the selection, use, care, and safe operation of equipment and tools for the home kitchen. Lead a class discussion on the contents of the audiovisuals. KEY QUESTIONS: What pieces of equipment can serve multiple purposes or functions within the kitchen? What factors determine what piece of equipment or tool is selected for a particular task? What precautions should be practiced when using equipment and tools?
	Lead a class discussion on inexpensive adaptations of food preparation equipment and tools that could be made to accommodate persons with various kinds of handicaps. Examples include the following: 1) Cut a hole in a pull-out drawer or breadboard so a mixing bowl can be inserted for steady mixing. 2) Tape handles to improve grip. 3) Set a mixing bowl on a wet towel laid on a counter surface for improved bowl and countertop grip when stirring bowl contents.

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Divide the class into groups. Have each group choose a complex food preparation activity. Ask the groups to plan to utilize equipment in a manner which would facilitate the preparation. KEY QUESTION: How can equipment save time and energy in food preparation?[C]
D. Safety and sanitation 1. Safety in food preparation	Lead a class discussion on the dangers of food-borne illnesses including those illnesses caused by staphylococcus, salmonella, clostridium botulinum, clostridium perfringens, and others. Include information on types, causes, transmission, and prevention of food-borne illnesses. Define the following terms: food-borne illness, staphylococcus, salmonella, clostridium botulinum, clostridium perfringens, hepatitis, sanitation, cross-contamination, sanitized, bacteria, virus, and clean. Display posters or pictures or use audiovisuals related to food-borne illnesses and methods of prevention that should be practiced.[B]
	Lead a class discussion regarding which foods are the most dangerous to prepare in terms of hazards to the food preparer. Dangerous foods might include fish, chicken, or potatoes when they are prepared by frying in an open kettle which can spatter hot fat or oil. Another might be candy which is cooked at an extremely high temperature and could burn a person severely if dripped or handled when it is too hot. As a class, discuss whether the food itself, the equipment used to prepare it, or some other factor causes the most danger to the food preparer. Have the class develop a list of 10 safety practices which would be most important to remember in the food preparation laboratory.
	As an enrichment experience, have students design attractive and attention-getting signs which list safety practices and can be placed in several locations around the foods laboratory.[C]
a. Safe work practices	Have students view audiovisuals or other references on safe work practices in the kitchen. Lead a class discussion on the advantages and disadvantages of practicing safe work habits at home and when employed. KEY QUESTIONS: What injuries occur in a kitchen when precautions are not taken? What adjustments within a kitchen or when using kitchen equipment could be made to promote safety?[C]
	Instruct students to view audiovisuals and study resources on equipment and tool use and safety in home and commercial kitchens. Have students identify safety practices. CRITICAL QUESTION: What safety practices are applicable in both home and commercial food preparation?[C]

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Develop a bulletin board illustrating hazardous work practices and other hazards in home and commercial kitchens. Illustrate the hazards and ways of correcting them. Instruct students to check the laboratory kitchens to see if hazards are present, and make plans for corrections or improvements.[C]
	As a Student Occupational Activity, have students research first aid for kitchen accidents. Include information on treating injuries from burns, cuts, and falls. Equip a small first aid kit that can be kept in the home kitchen for quick use when necessary. Place a list of emergency phone numbers by the telephone closest to the kitchen. Include the numbers for the nearest poison control center and the fire department.
b. Equipment safety	Conduct small group demonstrations on kitchen safety practices for the following topics: 1) Use and care of knives 2) Can openers 3) Gas and electric ranges 4) Garbage disposals 5) Large and small electrical appliances 6) Hot pots and pans 7) Handling spilled substances 8) Grease fires
	Lead a class discussion on safety precautions that are necessary when small children are in the home. Examples include the following: 1) Special latches for lower cabinet doors 2) Safe storage of dangerous cleaning products 3) Turning handles of pots and pans toward the inside of the range top 4) Proper use of electrical cords 5) Safety covers for outlets
	Appoint students to serve as equipment and tool safety specialists for the class. Have students research and present written reports or demonstrations on assigned pieces of food preparation equipment and tools. Have students become skilled in proper safety precautions for cleaning, appropriate placement in the laboratory when in use, and recommendations for the best storage location for equipment and tools. Evaluate students' written reports on the basis of content and effective communication skills. KEY QUESTIONS: How should the pieces of equipment be used and cleaned? What types of accidents may occur if proper safety, use, and care are not observed?[B] [C]

[C] = Common Essential Element

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
c. Work area safety	Have students examine the list of safety precautions in Teaching Aid 25, Safety Precautions for Food Service Employees. Have them rewrite the list so that it applies specifically to household kitchen safety hazards. If the students believe that an item reflects a hazard which would be present only in a large institutional or restaurant kitchen, have them state a different precaution which would be more appropriate to household kitchens. When the lists are complete, have each individual share one or more of the household safety precautions with the class. Follow by leading a class discussion about the differences between safety in the home and in the work place. KEY QUESTIONS: Why do safety precautions for large kitchens seem more formal or strict than what most people use in their own kitchens? Are there hazards in large, institutional, or commercial kitchens which are nonexistent or much less significant in the household kitchen? Are there special hazards common in household kitchens which rarely occur in commercial kitchens? Which of the safety precautions for the household kitchen from the students' lists would be important to teach to children in the household who prepare food only occasionally? Which precautions are least often followed in the kitchens they know? Why?[B] [C]
	Have students view audiovisuals or other resources on safety in the home kitchen and safety in commercial food establishments. Lead a class discussion on the information and compare the similarities and differences.[C]
	Invite a resource person to speak to the class on the importance of safety and sanitation in the food service industry. Have the students prepare questions to ask the resource person. Ask the resource person to compare industrial safety and sanitation to home safety and sanitation. CRITICAL QUESTIONS: Do safety and sanitation practices in the home compare to safety and sanitation procedures in industry? Why or why not?
2. Procedures for prevention of food contamination a. Personal hygiene practices	Have students imagine that each of them recently has won the grand prize in a sweepstakes sponsored by a food manufacturing company. The prize is one year of the services of a full-time cook/kitchen assistant and food for one year for everyone living in their household. Ask the students to list the expectations they would have regarding how the cook should dress, what personal hygiene practices would be important for the cook/kitchen assistant to follow, and any special food handling procedures which they would insist upon. As the supervisors of the cook/kitchen assistant, how would they conduct routine safety and cleanliness observations to check the work habits of their

[B] = Basic Skill Reinforcement
[C] = Common Essential Element

employee and correct unsafe practices? Lead a class discussion on any differences among the expectations of the students or their planned supervisory methods. KEY QUESTIONS: Would the students have higher standards for the personal hygiene, food handling practices, and manner of dress for their cook/kitchen assistant than they would expect of the persons who currently prepare their meals? Why or why not?[C]

Have students view audiovisuals on personal hygiene practices to observe when working with foods. Lead a class discussion on the audiovisuals. KEY QUESTION: If personal hygiene practices are not followed, what effects might this have on family members?

Have students work in groups to list standards for personal cleanliness which should be followed while working in the kitchen. Examples include the following:

1) Wash hands thoroughly before handling food.
2) Do not touch or comb hair while in the kitchen.
3) Do not taste food with fingers or utensils used in food preparation.

Share each group's list with the class. Refer to Teaching Aid 26, Hand Sanitation, to introduce personal cleanliness and food preparation.[B]

Prepare agar plates to show the growth of bacteria resulting from lack of personal cleanliness. Let someone cough, sneeze, touch with dirty hands, touch with clean hands, and place a hair on five different agar plates. View the plates each day for three days. KEY QUESTIONS: Which plate showed the least contamination? Which plate showed the most contamination? What conclusions can be drawn about the experiment?[B]

b. Food handling and storage

Have the students list several foods which many food preparers find necessary to touch with their hands when preparing and serving the foods. Similarly, have the students describe situations when food preparers believe it is necessary to taste foods. As each example is given, have the students explain how the food preparer can handle or taste the foods so they remain uncontaminated. Identify bad habits that some food preparers exhibit, such as tasting foods with a finger or stirring utensil. This would not be a good idea for students to do when handling foods in the food preparation laboratory because it can spread illness or cause possible food poisoning.[C]

Have students view audiovisuals on handling potentially dangerous foods safely to prevent bacterial contamination and

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

growth of food-borne illnesses. Identify foods that are high in protein, moisture, and/or carbohydrates and that must be refrigerated immediately after preparation. Examples include potato salad, cream puffs, and/or poultry stuffing or dressing. Lead a class discussion on instances of food-borne illness involving some of these kinds of foods.[B] [C]

Have students study resources on proper food storage temperatures and on selecting appropriate thermometers for the task. Use Teaching Aid 27, Temperature of Food for Control of Bacteria, in a class discussion following the reading. KEY QUESTIONS: How long can prepared food be safely left at room temperature? What is the temperature danger zone for bacterial growth?[C]

Working in groups, have students develop a list of measures which can be utilized during food preparation for controlling or preventing bacterial growth. Remember that bacteria grow best with food, moisture, warm temperatures, darkness, and oxygen. Groups should report their results to the class.[C]

Invite a restaurant manager or health department representative to class to speak on the importance of maintaining correct food temperatures, maintaining a safe and sanitary work environment, practicing safety precautions, and observing good personal hygiene and food handling practices when employed in the food service industry. Have the students prepare questions to ask the speaker.[C]

During each food preparation laboratory, identify a student in each laboratory group to observe and report observations of good and bad personal hygiene practices, sanitation, safety, equipment and tool handling, and food handling practices of their group members. The observing student should suggest ways to correct problems. Duties of the group members should be rotated so that each student will have an opportunity to observe and report the group performance.[C]

On the chalkboard, create three columns, labeling the first column "Short-Term Storage," the second column "Medium-Term Storage," and the last column "Long-Term Storage." Define *short-term storage* to the class as one to two days, *medium-term storage* as one week to three weeks, and *long-term storage* as one month or longer. Have the students identify about 10 foods for each column and list them, leaving space under each. Examples might include fresh fish or ripe bananas as short-term storage foods,

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eggs or cheddar cheese under medium-term storage, and canned green beans or pickled cucumbers as foods permitting long-term storage. Have the students use resources in the classroom to look up the appropriate storage method for each food and write a description of the method under the food, such as wrap tightly and refrigerate. Lead a class discussion on the reasons why some storage methods render a food less vulnerable to damage from spoilage and natural ripening processes.

Demonstrate and have the students practice several food storage methods. These might include refrigeration, freezing, canning, pickling, and/or drying. If possible, use the same food for several methods and have students compare the quality and flavor of the results.

c. Sanitation of kitchen equipment, work areas, and ware washing

Provide students with information regarding the chemistry of cleaning agents and appropriate procedures for cleaning using selected agents. Define the following terms, and explain how they apply to the removal of soil from cookware, dish ware, cooking utensils, and flatware: scrapping, prerinsing, detergent, saponification, emulsification, chlorine, water conditioning/softening, sheeting, chemical sanitizing, liming, water spotting, air drying, and chemical etching of glassware.[B]

Demonstrate, or assign students to research and demonstrate, proper procedures for hand washing and drying various items, including flatware, glasses, cups, pots and pans, food preparation tools and utensils, plastic containers, and food storage containers. Explain what causes unfavorable results when washing cookware, dinnerware, flatware, and cooking utensils. The following problems may occur:

* Cloudy glasses
* Filmed dishes
* Spotted glassware
* Etched glassware
* Black or grey metal marks on dishes
* Pitting and corrosion of stainless steel flatware
* Stained plastic ware
* Darkening of aluminum
* Tarnish on silver plate, silverware, and copper utensils

Invite a restaurant manager or other resource person to discuss kitchen sanitation, sanitation procedures, and pest control. Have students prepare questions in advance. KEY QUESTIONS: What methods are used to sanitize pots, pans, and dishes? How should sanitized dishes and equipment be handled and/or stored? What instructions on sanitation are given to employees?

[B] = Basic Skill Reinforcement

Obtain the use and care guides and operating instructions for several brands of electric dishwashers. In groups, have the students examine the guides and compile the following information on a summary chart:

* Recommended water temperature range
* Suggested detergents
* Quality of water recommended
* Items not suggested for washing
* When to select air drying instead of heat drying
* Filters and other components requiring periodic cleaning or replacement
* Warranty information.

Lead a class discussion on the advantages and disadvantages of machine dish washing in comparison to hand washing of dishes. If possible, obtain energy usage information on electric dishwashers and estimate possible cost of operation for a selected period of time, such as a month or a year. KEY QUESTIONS: How does the cost of machine and hand washing of dishes compare? How do the two methods compare in their ability to sanitize?

Have students study references on kitchen sanitation practices. Include the following practices:

* Wash hands before handling food, dishes, and utensils.
* Keep surfaces on which food is placed clean and sanitized, especially cutting boards.
* Follow sanitary dishwashing practices.
* Maintain proper pest control.
* Keep floors clean.
* Clean storage areas.

Lead a class discussion on the readings.[B]

Have students role play situations showing the disregard of sanitation practices in home kitchens. Ask observers to point out each error regarding sanitation and have the players do an instant replay correction.

d. Pest and environmental contaminant control

Show pictures of a wide variety of pest control products and cleaning agents which commonly are available in a local grocery store. Have students read the labels, especially safety warnings, to form conclusions about what to do to prevent contamination of food or utensils when using these products. Ask the students to think about what general practices they would follow if they were handed such a product, told what kind of product it was, and how it was to be administered or used, but the label was missing. KEY QUESTIONS: What common safety practices are important to

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CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	follow with most pest control products? Are there similarities between the practices of safe use of pesticides and the safe use of cleaning products? What are the similarities?
E. Preparing nutritious meals 1. Food preparation of simple daily meals	NOTE: A review of basic principles of food preparation may be desirable for those students who have successfully completed the food and nutrition section of the Comprehensive Home Economics course. If students have not taken or successfully completed the course, basic principles of food preparation should be included in the Food Science and Nutrition course. Refer to Unit VII of the *Comprehensive Home Economics* guide, Home Economics Curriculum Center, Texas Tech University, Lubbock, Texas.
a. Using recipes	Select several recipes at random from cookbooks in the foods laboratory and show them to students, or use Teaching Aid 28, Sample Recipe. Compare the formats of the recipes from different cookbooks or samples. Read the recipes to see if they contain any terms that are unfamiliar. Explain the terms used. KEY QUESTIONS: Are the recipes similar? different? Why is it best to avoid using abbreviations in recipes? Direct students to find charts in references and cookbooks which give the common abbreviations used in recipes. Have students read recipes and be able to write out the correct interpretation for all abbreviated measurements or terms. KEY QUESTION: Is there more than one correct abbreviation for some measurements? Why is it important to know common abbreviations? Have students study reference material to find a list of basic equivalent measures. Lead a class discussion on the advantages of knowing the basic equivalent measures. Have students practice calculating equivalents for different measurements.[B] Have students examine several recipe books or reference books and texts to find examples of charts which give information on substitutions that can be used successfully in recipes. KEY QUESTIONS: Are some charts more extensive than others? Which items appear on all the charts? Are some recipes better suited for substitutions and/or changes than others? Why or why not? Give students a recipe which serves four persons. Have them work in pairs to rewrite the recipe increasing the ingredients to make six servings. Use equivalents to enable measuring the most efficient way possible. Also, rewrite the recipe doubling the ingredients in the original recipe.[B] [C]

[B] = Basic Skill Reinforcement
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CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	As an enrichment experience, have students prepare an exhibit of foods containing the major nutrients which can be substituted for one another in menus when some foods are unobtainable or out of season. Examples include the following: * Grapefruit juice for orange juice * Buttered rice for mashed potatoes * Coleslaw for lettuce salad * Lite cheese for milk Provide labels showing nutrient similarities and differences.
b. Measuring techniques	Provide information, or present a demonstration, to students on measuring equipment and techniques. Refer to Teaching Aid 29, U.S. Standard and Metric Measurements. Include definitions of the following terms: level, level-off, pack firmly, liquid measuring cups, and sift. Demonstrate techniques for measuring brown sugar, shortening, various dry ingredients, and liquids. Demonstrate measuring flour that is sifted and flour that is not sifted. Project how this difference could affect a recipe if the flour should have been sifted before measuring. KEY QUESTIONS: Why is accurate measurement important in food preparation? What measuring equipment is available other than measuring spoons and cups?[B] Lead a class discussion on how one should measure one-half of an egg. Many recipes call for one egg and in order to cut the recipe in half, it is necessary to measure one-half of an egg. KEY QUESTIONS: What procedures should be used to measure one-half of an egg? Would the recipe be adversely affected if the whole egg was used?[B]
c. Preparation terms and techniques	Have students use references to study preparation terms and techniques. Identify terms such as whip, fold, beat, cream, stir, blanch, stew, roast, steam, broil, bake, fry, sauté, simmer, boil, marinate, chop, dice, mince, grate, slice, sliver, bread, brush, coat, dot, drain, dredge, flute, skim, strain, and scrub.[B] Divide students into groups to demonstrate various food preparation techniques such as the following: * Folding in ingredients * Creaming shortening and sugar * Sautéeing vegetables * Dicing * Mincing * Chopping ingredients Have students study information in several resources, give demonstrations to the class, and answer questions.[C]

[B] = Basic Skill Reinforcement

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CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
d. Meal preparation	Have students participate in a breakfast or lunch laboratory planned for a vegetarian. Have each group plan a one day vegetarian menu. If possible, use a dietary analysis computer program to determine adequacy of the day's diet. Make corrections if necessary. Have each group prepare the vegetarian breakfast or lunch from the menu. Items such as an appetizer, garnish, condiment, main dish or entrée, fruit or vegetable accompaniments, bread, beverage, and dessert may be included.[C]
	Evaluate the laboratory activity using Teaching Aid 30, Laboratory Activity Evaluation. KEY QUESTIONS: What are the product quality indicators achieved as a result of correctly applying principles of food preparation? Which product quality indicators were not achieved? Why were the indicators not achieved? What should have been done to achieve the quality indicators? What nutritional contributions do the foods prepared add to an individual's daily diet? What food group is represented by each product? What nutrients does each product primarily contain? Did the food preparation techniques used preserve or destroy the product's nutrients? Why ?
	Have students participate in a lunch laboratory planned for a family on a low-fat diet. Have each group plan menus for a one day low-fat diet. If possible, use a dietary analysis computer program to determine adequacy of the day's diet. Make corrections if necessary. Have each group prepare the low-fat lunch from the menu. Items such as an appetizer, garnish, condiment, main dish or entrée, fruit or vegetable accompaniments, bread, beverage, and dessert may be included.[C]
	Evaluate the laboratory activity using Teaching Aid 30, Laboratory Activity Evaluation. KEY QUESTIONS: What are the product quality indicators achieved as a result of correctly applying principles of food preparation? Which product quality indicators were not achieved? Why were the indicators not achieved? What should have been done to achieve the quality indicators? What nutritional contributions do the foods prepared add to an individual's daily diet? What food group is represented by each product? What nutrients does each product primarily contain? Did the food preparation techniques used preserve or destroy the product's nutrients? Why ?
	Have students participate in a lunch or dinner laboratory planned for a family on a low-sodium diet. Have each group plan a one day low-sodium diet. If possible, use a dietary analysis computer program to determine adequacy of the day's diet. Make corrections

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if necessary. Have each group prepare the low-sodium lunch or dinner from the menu. Items such as an appetizer, garnish, condiment, main dish or entrée, fruit or vegetable accompaniments, bread, beverage, and dessert may be included.[C]

Evaluate the laboratory activity using Teaching Aid 30, Laboratory Activity Evaluation. KEY QUESTIONS: What are the product quality indicators achieved as a result of correctly applying principles of food preparation? Which product quality indicators were not achieved? Why were the indicators not achieved? What should have been done to achieve the quality indicators? What nutritional contributions do the foods prepared add to an individual's daily diet? What food group is represented by each product? What nutrients does each product primarily contain? Did the food preparation techniques used preserve or destroy the product's nutrients? Why ?

Have students participate in a breakfast and/or lunch laboratory featuring a low cost menu for one laboratory experience and a medium cost menu for the second experience. Have each group plan a one day menu for both low and medium cost menus. If possible, use a dietary analysis computer program to determine adequacy of the diets. Make corrections if necessary. Each group is to determine the cost of each meal and the cost per person. Have each group prepare the appropriate meals. Items such as an appetizer, garnish, condiment, main dish or entrée, fruit or vegetable accompaniments, bread, beverage, and dessert may be included.[C]

Evaluate the laboratory activity using Teaching Aid 30, Laboratory Activity Evaluation. KEY QUESTIONS: What are the product quality indicators achieved as a result of correctly applying principles of food preparation? Which product quality indicators were not achieved? Why were the indicators not achieved? What should have been done to achieve the quality indicators? What nutritional contributions do the foods prepared add to an individual's daily diet? What food group is represented by each product? What nutrients does each product primarily contain? Did the food preparation techniques used preserve or destroy the product's nutrients? Why ?

Divide the class into groups and assign each group to a meal: breakfast, lunch, or dinner. Have each group determine a family type, such as a dual career couple or a group of people involved in a senior citizens luncheon program. Have each group plan and prepare both a traditional and nontraditional meal appropriate for

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CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	their situation. The meal might be based on a nontraditional style of serving or on ethnic foods.[C]
	Evaluate the laboratory activity using Teaching Aid 30, Laboratory Activity Evaluation. KEY QUESTIONS: What are the product quality indicators achieved as a result of correctly applying principles of food preparation? Which product quality indicators were not achieved? Why were the indicators not achieved? What should have been done to achieve the quality indicators? What nutritional contributions do the foods prepared add to an individual's daily diet? What food group is represented by each product? What nutrients does each product primarily contain? Did the food preparation techniques used preserve or destroy the product's nutrients? Why ?
2. Meals away from home a. Packed meals	Have students suggest types of appropriate foods that might be included in a packed lunch or dinner. Write the suggestions on the chalkboard. Lead a class discussion on the nutritional value of the items, the cost of the items, the convenience of the items, and if the items would require heating or other preparation at the time of eating. As a class, discuss the advantages and disadvantages of packing meals.
	Have students participate in a packed lunch or dinner laboratory. Have each group plan a one day menu. If possible, use a dietary analysis computer program to determine adequacy of the diet. Make corrections if necessary. Have each group prepare the packed lunch or dinner and determine the cost.[C]
	Evaluate the laboratory activity using Teaching Aid 30, Laboratory Activity Evaluation. KEY QUESTIONS: What are the product quality indicators achieved as a result of correctly applying principles of food preparation? Which product quality indicators were not achieved? Why were the indicators not achieved? What should have been done to achieve the quality indicators? What nutritional contributions do the foods prepared add to an individual's daily diet? What food group is represented by each product? What nutrients does each product primarily contain? Did the food preparation techniques used preserve or destroy the product's nutrients? Why ?
b. Snacks	Survey the class to determine the number of students who purchase snack foods from vending machines, fast food restaurants, or take-out businesses. Lead a class discussion on nutritious snacks which could be brought from home. KEY QUESTIONS: How can snacks be made nutritious? How can snacks add to a person's nutritional requirements during the day?

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CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	What are some examples of non-nutritious snacks? What are some examples of nutritious snacks? Have students list the snacks they consumed for the past three days. As a class, compile a list of snacks dividing them into nutritious and non-nutritious categories. Check the foods that were brought from home and those which were purchased away from home. Compare the lists. In groups, have students participate in a nutritious snack food laboratory. Have each group plan a one day menu which includes nutritious snacks. If possible, use a dietary analysis computer program to determine nutritional adequacy of each menu. Make improvements to menu plans if necessary. Have each group of students prepare the nutritious snacks listed on their menu and determine the total cost of each snack in addition to the cost per person.[B] [C] Evaluate the laboratory activity using Teaching Aid 30, Laboratory Activity Evaluation. KEY QUESTIONS: What are the product quality indicators achieved as a result of correctly applying principles of food preparation? Which product quality indicators were not achieved? Why were the indicators not achieved? What should have been done to achieve the quality indicators? What nutritional contributions do the foods prepared add to an individual's daily diet? What food group is represented by each product? What nutrients does each product primarily contain? Did the food preparation techniques used preserve or destroy the product's nutrients? Why ?
3. Nutritious food preparation for special occasions a. Foods for entertaining b. Holiday and special occasion foods	Have the class plan and prepare a lunch for guests. Invite other teachers, parents, or guardians to attend the meal. Lead a class discussion on the planning and preparation needed for preparing foods and meals for groups.[C] Evaluate the laboratory activity using Teaching Aid 30, Laboratory Activity Evaluation. KEY QUESTIONS: What are the product quality indicators achieved as a result of correctly applying principles of food preparation? Which product quality indicators were not achieved? Why were the indicators not achieved? What should have been done to achieve the quality indicators? What nutritional contributions do the foods prepared add to an individual's daily diet? What food group is represented by each product? What nutrients does each product primarily contain? Did the food preparation techniques used preserve or destroy the product's nutrients? Why ?

[B] = Basic Skill Reinforcement
[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	As a class, make a list of special occasions including holidays, birthdays, wedding receptions, and other situations. Lead a class discussion on traditional or typical foods served at these occasions. Have students create less traditional menus to serve. Prepare and serve the foods.
F. Nutritious diets for budgetary needs 1. Guide for food planning within budget limitations a. Thrifty plan b. Low-cost plan c. Moderate plan d. Liberal plan	Have students brainstorm to list factors that affect a family's food budget. Examples include the following: 1) Geographic area of residence 2) Number in family 3) Ages and activities of family members 4) Home food production 5) Food storage facilities 6) Income level 7) Food preferences of family members 8) Increase of women working outside the home. Lead a class discussion on how any of these various factors could affect a family's food budget. Focus on how individual students in the class may have noticed such factors influencing their family's budget. Lead a class discussion on foods that might be included in planning menus for a family with a very limited income, a moderate income, and a high income. Compile a list of the foods appropriate to each income level and compute the cost of each list by using newspapers with grocery prices. KEY QUESTIONS: What differences in costs were found in the lists for the three different income levels? Can good nutrition be achieved on a low income? Can poor nutrition occur among the more affluent? What factors could influence both groups? Have students read references on food budgeting and suggestions for ways of staying within a given food budget. Lead a class discussion on additional strategies to stay within good budgets. Examples might include the following: * Using coupons * Meat extenders * Less expensive forms of a food * Day old breads * Purchasing foods in season * Purchasing foods in larger quantities if less expensive per unit[B] Divide the class into groups. Have each group develop daily menus varying in cost levels. Determine the nutritional adequacy of the menus by using a dietary analysis computer program. Evaluate the aesthetic quality of the menus. Assume that the menus

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developed will be used by a family of five (two adults, two children, and one teenager). Have students compute the cost per person for one day's menu at each cost level.[B]

Using resources, have students locate articles in current newspapers or magazines detailing how a particular family budgets their food money. Give a brief report to the class on the article. Lead a class discussion on the reports in light of the information that has been taught on meal planning and nutrition. KEY QUESTION: Do the meals of the family described in the article meet their nutritional requirements?

Lead a class discussion on the USDA Guide for Food Planning Within Budget Limitations and food budgeting. KEY QUESTIONS: How does impulse buying affect a budget? Should one shop when hungry? What is the purpose of a shopping list? How can a family on a very limited income eat out? How can purchasing sale items or using coupons help save money?

Have students prepare a nutritious meal plan for a family of four based on each of the USDA guidelines. Have students choose one of the plans, shop, and prepare the meal for the class. Keep a record of cost per person for the meal.[B] [C]

[B] = Basic Skill Reinforcement
[C] = Common Essential Element

TAC 75.83
FOOD SCIENCE AND NUTRITION
UNIT IV

COMPETENCY: (i.4) *Concepts and skills relating food and nutrition to special needs.*

SUB-COMPETENCIES:

(A) *Compare dietary needs caused by age and health conditions.*

(B) *Contrast special dietary needs related to sports and other activities.*

(C) *Differentiate eating disorders, their effects, and treatment.*

(D) *Propose ways persons in self care such as children, elderly, and handicapped may meet nutritional needs.*

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
IV. Relating food and nutrition to special needs A. Special dietary needs 1. Age-related dietary needs	NOTE:. The content identified in competency IV.A. is appropriate to be taught simultaneously with competency I.D. of this course. Competency IV.C. may be taught following competencies IV.A. and I.D. Using reference materials, have students prepare a written report on one of the following dietary related problems: calcium, iron, fat, protein, or calories. Have students present the report to the class. Lead a class discussion on dietary needs that are related to age. Evaluate the reports on the basis of effective written and oral communication skills and content. KEY QUESTIONS: How are nutrient requirements and/or uses changed as a result of age? Are specific nutrient imbalances or deficiencies contributing factors to specific age related diseases or health problems? Which nutrients are involved? What can individuals do to lessen the potential for age related diseases and health problems to occur?[B] Have students study resources on nutritional needs of the elderly. Lead a class discussion on the importance of planning nutrient-dense meals for the elderly because of decreasing needs for energy while nutrient levels remain similar as for other adults. Lead a class discussion on special considerations of dietary planning for the elderly. Examples include limited calories, more frequent meals, soft foods for those with dental problems, and mildly seasoned foods for those with digestive problems. KEY QUESTIONS: What are some psychological reasons for an elderly person to lose their appetite or not eat? What can be done to

[B] = Basic Skill Reinforcement

prevent these problems from occurring? What can be done to help an elderly person regain his or her appetite?

Have students share with the class any age related dietary needs of their grandparents, older relatives, or someone that they know. Have the student interview the person and share the information with the class. Students should ask the following questions. KEY QUESTIONS: What is the nature of the special dietary need? Could this need have been changed had one eaten more nutritionally when younger? How have you met the specific dietary need? Has it changed your life-style? What advice would you give younger people, such as teenagers, about diet and nutrition?

2. Health conditions

Have students bring to class current magazine or newspaper articles which discuss the role of nutrition in health conditions such as illness (cancer or colds) and/or stress. Lead a class discussion on the validity of the articles. KEY QUESTIONS: What nutritional claims are made? Can one substantiate the claims made by the article with sound nutritional information obtained from a nutrition text or other reliable source? In general, is there validity to the claim that diet can effect or improve illness and/or stress?

As an enrichment experience, have students visit the public or school library and determine what kinds of books are available to assist people who require special diets. Have the class check out several special diet books. Have students review and evaluate the diet books to determine the types of foods suggested for various special diets. KEY QUESTIONS: Would the books be helpful to persons planning menus for the special diets? What other information would be helpful?

As a Student Occupational Activity or an enrichment experience, have students call or write nonprofit health associations, such as those established for diabetes, heart and coronary diseases, or kidney diseases. Ask for special diets for the particular disorders addressed by the associations. As an alternative, students might interview a representative of an association. Study the information received and give a brief report to the class. KEY QUESTIONS: How does the daily diet and nutrient intake positively and negatively affect those individuals served by the association? What dietary restrictions must individuals served by the association observe in order to maintain adequate nutrition and nutritional well-being? What other services does the nonprofit health association provide?[C] [B]

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Have students plan and prepare an exhibit using food models to show meal variations for individuals with special needs: elderly, diabetics, pregnant women, and people with hypertension or heart disease. Show how meals can be modified to meet special needs of individual family members. Verify the nutritional adequacy of the meals proposed. As an enrichment experience or Student Occupational Activity, have students contact the hospital serving the community to determine who instructs patients requiring special diets. Interview the instructor or dietitian. Report the results of the interview to the class. Evaluate students' reports for content and effective communication skills.[B] [C]
3. Health issues a. Avoiding too much fat, saturated fat, and cholesterol	Lead a class discussion regarding research findings indicating that Americans are consuming a higher percentage of calories from fat than many other countries. KEY QUESTIONS: What has caused this tremendous increase in fat consumption? How can fat consumption be lowered in diets? What health problems are attributed to high fat consumption? As an enrichment experience, have students use charts on nutritive values of foods to identify twenty food items that are high in saturated fat. The list should be shared with the class. Compile a class list of 10 foods from each food group. KEY QUESTION: Which are high in saturated fat and would need to be limited by persons with high cholesterol levels? Have students develop a list of ways to avoid too much fat, saturated fat, and cholesterol in the diet. NOTE: Include the following items: 1) Select more poultry, fish, dry beans and peas, and lean meats for protein. 2) Use eggs, liver, and shellfish in moderation. 3) Limit butter, cream, hydrogenated margarine, shortening, coconut oil, and foods made with these products. 4) Trim fat from meats. 5) Roast, boil, bake, or broil rather than fry. 6) Read labels to determine the amount and types of fat in foods. Using Teaching Aid 31, Create A Low-Fat Menu, have students adjust the menu provided to make it lower in total fat content and lower in cholesterol. Have students compare menu changes made and discuss foods which are high in fat and cholesterol.

[B] = Basic Skill Reinforcement
[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Using food models, have students plan an exhibit of a daily menu for a person needing to reduce the total fat intake in the diet. Have students plan an exhibit of a daily menu for a person needing to reduce cholesterol intake in the diet.
b. Avoiding too much sugar	Have students study articles on sugar consumption. KEY QUESTIONS: How many pounds of sugar does the average American eat in one year? How much per day? What health problems other than tooth decay may result from consuming too much sugar? Is sugar hidden in foods? What are some foods high in sugar content? How might excessive sugar consumption be reduced or avoided? Have students construct guidelines for reducing sugar consumption in the diet. NOTE: Include suggestions such as the following: 1) Serve fresh fruits and vegetables rather than candy and cookies. 2) Limit the number of snack foods and soft drinks with sugar and other sweets. 3) Use spices for flavor instead of sugar. 4) Read labels to determine sugar content. 5) Eat more fresh fruits and vegetables. 6) Limit the amount of sugar added to foods. Using Teaching Aid 32, Create A Low-Sugar Menu, have students adjust the menu provided to make it lower in sugar content. Have students compare menu changes made.
c. Avoiding too much sodium	Have students study resources to determine the quantity of salt consumed by the average American and the amount actually needed, and health problems associated with high sodium consumption. KEY QUESTIONS: What health problems are associated with a high level of salt consumption? How much salt does the average American need in the daily diet? How might one avoid excessive salt consumption? Instruct students to use charts on nutritive values of foods to identify foods high in salt/sodium content. Have students prepare a class display or exhibit identifying high salt content foods and suggesting ways to decrease salt in the daily diet. The exhibit could include a sample daily menu that meets Recommended Dietary Allowance guidelines. Using Teaching Aid 33, Create A Low-Sodium Menu, have students adjust the menu provided to make it lower in sodium content. Lead a class discussion to compare students' menu improvements.

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
B. Dietary needs and sports	NOTE: The content identified in competency IV.B. of this unit is appropriate to be taught after competency IV.C. of this unit. Competency I.G. of this course may be taught following competency IV.B.
1. Nutrient needs in physical conditioning programs	Provide information on nutritional needs during physical conditioning, including weight lifting to improve weight and muscle development, pregame meals, and fluid replacement while engaging in physical conditioning. KEY QUESTIONS: What is the role of supplementation for a person who is in a physical conditioning program? What would be an appropriate pregame meal? What is dehydration?
	Have students study resources on carbohydrate and/or protein loading. Lead a class discussion on the practices. KEY QUESTIONS: What are carbohydrate loading and protein loading? When and for what purposes would individuals use the practices? Are these practices nutritionally safe? Why or why not? Are these practices recognized as being medically safe? Why or why not?[B]
	Invite an exercise physiologist, or other nutrition and sport resource person to discuss nutritional requirements during conditioning. Have students prepare a list of questions from claims that they have heard or read to ask the resource person. After hearing the resource person's information and reading additional materials on nutrition and conditioning, have students role play a radio show in which the audience can call in and ask a Dr. Nutrition questions related to nutrition and physical conditioning programs.
2. Stress and dietary needs	Have students prepare a library report which focuses on the topic of nutrition when recovering from illness or injury. Topics might include nutrition when recovering from an auto accident, or nutrition after surgery, such as a tonsillectomy, or nutrition during and recovering from an illness like the flu.[B]
	Have students divide into groups and write a summary of how they felt prior to taking a major exam. Have them describe the foods they ate prior to the exam and how that may have positively or negatively affected their performance.
	Lead a class discussion on the relationship between nutrition, stress, alertness, and mental/physical performance. KEY QUESTIONS: Can food consumption affect performance on exams? What foods might one suggest be consumed prior to a stressful exam? What foods might have a negative affect when taking an exam?[B]

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Divide the class into groups and have them identify an occupation which is particularly stressful, such as a medical doctor, fire fighter, or other occupations. Have the group role play the following situations: 1) An evening meal after a particularly stressful day is consumed which has poor nutritional choices. 2) A nutritious meal is consumed. KEY QUESTIONS: How would a nutritious meal contribute to reducing a person's level of stress? How can consuming high calorie/low nutrient dense foods contribute to increasing a person's stress?[C]
	Invite a resource person to class to speak on stress related illnesses and the impact of nutrition on the cause and cure of the illness. Guide students to prepare questions in advance of the visit. KEY QUESTIONS: What role does nutrition play on stress? How might stress affect the quantities of foods consumed?
C. Differentiate eating disorders, their effects, and treatment 1. Food binging 2. Anorexia nervosa 3. Bulimia	NOTE: The content identified in competency IV.C. is appropriate to be taught after competencies IV.A. and I.D. of this course. Competency IV.B. may be taught following competency IV.C.
	Lead a class discussion or ask a health professional to present information on eating disorders. KEY QUESTIONS: What are food binging, anorexia nervosa, and bulimia? What are the similarities and differences of these eating disorders? Why do teens often have eating disorders? Can a person with an eating disorder be helped? How do each of the eating disorders affect the body? How do each of the eating disorders affect mental alertness, personal safety, physical coordination, and mental/physical performance?
	Have students use resources to define the terms *anorexia nervosa* and *bulimia* and to determine factual information about the disorders. Have students share their information in class. KEY QUESTIONS: What are common characteristics of people who have either of the disorders? What symptoms accompany the disorders in the beginning? What dangers are involved? How common are the disorders? How do the disorders begin? Are the problems psychological, physical, or both? Can the disorders affect cognitive and social development and/or functioning of individuals? Why or why not? What should be done to assist individuals in overcoming the short-term and/or long-term psychological effects of the disorders? What are the chances for recovery? How long does psychological recovery take? Is psychological recovery successful? Why or why not?

[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Lead a class discussion on anorexia nervosa and bulimia. NOTE: Emphasize the differences and similarities between the two disorders. Special attention should be paid to the short-term and long-term physical effects of the disorders on the human body. The physical dangers should be noted. KEY QUESTIONS: What other disorders are commonly associated with anorexia nervosa and/or bulimia? What are the chances of physical recovery from the disorders? How long does physical recovery take? How successful is the recovery process? Does the human body physically recover from the effects of anorexia nervosa and/or bulimia? Why or why not? Should dieting be done under the supervision of medical care? Why or why not?
	Have students write an article for a magazine that would define and discuss the various eating disorders: *food binging*, *anorexia nervosa*, and *bulimia*. Or, have students create a fictitious story about a student with an eating disorder.[B]
D. Meeting nutritional needs for persons in self-care 1. Children	NOTE: The content identified in competency IV.D. is appropriate to be taught after competency I.G. of this course. Competency II.A. may be taught following competency IV.D.
	Have students plan and prepare a variety of nutritious snacks that would be appropriate for an elementary aged child to prepare at home. KEY QUESTIONS: Can after-school snacks be nutritious and simple to prepare? Can children successfully prepare their own nutritious snacks?
	Have students list possible equipment and preparation methods which can be utilized by children in the kitchen. Make two columns on the chalkboard with one headed "Appropriate for Children" and the other column headed "Inappropriate for Children." Place the suggestions in the best column. KEY QUESTIONS: Are there equipment choices and preparation methods that would be appropriate for children? What instructions or teaching would be necessary to enable a child to utilize equipment and prepare foods safely?
	Divide the class into groups. Assign each group a specific age of children. Have the students read resources on dietary needs and preferences of specific age groupings of children. Based upon the readings, have students plan a daily menu, including snacks, for their assigned age of children. Evaluate the menus for content. KEY QUESTIONS: How can children be encouraged to like nutritious foods? Why is it important to include snacks in meeting a child's overall nutrient needs? What are some examples of nutritious snack foods for children? Are the examples traditional

[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	snack foods? Why or why not? How can nutritious snack foods be made appealing to children? As an FHA/HERO activity or enrichment experience, have students prepare and serve nutritious snacks to a group of children in the community.
2. Elderly and handicapped	Invite a health professional who teaches adaptive food preparation techniques to elderly and handicapped persons to class to present information on the selection and preparation of foods. Ask the resource person to demonstrate food preparation techniques. Have students plan simple, nutritious meals that would be possible for an elderly or handicapped person to prepare on their own. As a Student Occupational Activity, students could identify an elderly or handicapped person and teach and/or assist them in preparing a simple meal.[C] Invite a resource person, such as a dietitian or center director from a special care facility for the elderly and/or handicapped, to class to present information about the nutritional needs of their clients. Guide students in preparing questions to be addressed during the presentation. KEY QUESTIONS: What are special dietary needs of the handicapped? elderly? What physical characteristics of these populations necessitate special diet patterns? What are common food preferences of their clients? What are techniques for capitalizing on healthy food preferences to achieve an adequate diet? What are techniques for modifying unhealthy food habits? Have students participate in a lunch or dinner laboratory featuring a meal appropriate for the elderly. Have each group plan menus for one day for an elderly person. Special dietary requirements such as low-fat, low-sodium, bland diet, or other needs should be considered. If possible, use a dietary analysis computer program to determine adequacy of the day's diet. Make corrections if necessary. Have each group prepare the selected meal from the menu. Have students use resources such as the local newspaper, government bulletins, or the local telephone directory to identify meal alternatives for the elderly and handicapped. KEY QUESTIONS: In addition to eating out at restaurants, how can elderly and handicapped people obtain prepared meals in the community? Are there adequate services available? What services could one suggest that might be instituted in the area?

[C] = Common Essential Element

TAC 75.83
FOOD SCIENCE AND NUTRITION
CAREER OPTIONS AND ADJUSTMENTS

COMPETENCY: (a.7) *Concepts and skills related to career options and adjustments.*

SUB-COMPETENCIES:

(A) *Relate personal characteristics to the appropriate career(s) addressed within each home economics course.*

(a.2 A) *Identify employment opportunities and preparation requirements in chosen field.*

(B) *Describe management practices facilitating individuals assuming multiple roles.*

(C) *Discuss demands and rewards in relation to personal and family life.*

(D) *Demonstrate effective money management.*

CONCEPTS

Career options and adjustments
- A. Personal characteristics needed for food science and nutrition careers
  - a.2 A Employment opportunities and preparation requirements

LEARNING AND EVALUATION EXPERIENCES

NOTE: In situations when both Food Science and Nutrition and Advanced Food Science and Nutrition are offered on a campus and taken by the same students, it is recommended that the Career Options and Adjustments unit in the Food Science and Nutrition course focus more on careers related to nutrition, food preparation, and dietetics. The Advanced Food Science and Nutrition course would focus more on careers related to food science, processing, marketing, and technology.

Encourage students to brainstorm and identify various occupational opportunities identified during the Food Science and Nutrition course. Have students review references to identify additional food science and nutrition-related occupations in the entry-level, skilled, technical, semiprofessional, and professional levels. Refer to Teaching Aid 34, Occupational Opportunities, for examples of jobs available. KEY QUESTIONS: Based on the occupations listed, what food science and nutrition careers are available locally? in the county? state? nation? other parts of the world?[C]

Using resources on employment opportunities in food science and nutrition careers, have students identify employment opportunities and the necessary personal characteristics, skills, education requirements, job salary ranges, job descriptions and duties, anticipated number of jobs available nationwide, and current and

[C] = Common Essential Element

future trends. One of the resources should be the *Occupational Outlook Handbook*. KEY QUESTIONS: What high school subjects would provide a good background for careers in this field? Why? What post-secondary training opportunities are available? What colleges offer degrees related to this field? What training opportunities are available locally?[B] [C]

Using resources, have students define the term *career ladders*. Lead a class discussion on career ladders. The discussion should relate to food science and nutrition occupations. Divide the class into groups. Have each group develop career ladders of food science and nutrition-related careers. The career ladders should include career levels, job titles, duties, and minimum qualifications. Use Teaching Aid 35, Career Ladder, to illustrate career opportunities in the restaurant industry. KEY QUESTION: Does experience or training allow one to enter the ladder in a higher position?[B] [C]

Invite a resource person to speak about identified food science and nutrition careers. Have the students prepare questions for the resource person to answer. Resource persons could include a hospital or community dietitian, restaurant manager, chef, butcher, and/or nutrition consultant.[C]

Have the school counselor or a local community college representative speak about training opportunities and programs to prepare people for careers in food science and nutrition. Have students prepare to ask the resource person questions regarding educational requirements, career preparation time, career preparation, and costs. Have the resource person bring college, university and vocational/technical school catalogs to the class to show training and degree programs in food science and nutrition. KEY QUESTIONS: What types of training are available for students seeking careers in food science and nutrition? What is the cost of training? How long is the training? Are short courses offered? Are night classes available? What are the admission requirements? What job placement services are offered?[C]

Obtain college and university catalogs, technical school and culinary institute catalogs, and information from professional associations, such as the National Restaurant Association. Have students use these resources to obtain information about degree programs in food science and nutrition, entrance requirements, and courses of study to complete an educational program leading to a position in the food industry, food science and technology, or nutrition science. Refer to Teaching Aid 36, Career Awareness.

[B] = Basic Skill Reinforcement

[C] = Common Essential Element

Students may wish to investigate the educational requirements of these careers. Have each student study a particular program and describe it to the rest of the class, indicating the college or school where it is offered, entrance requirements, length of the course of study, types of courses required in the program, opportunities for supervised work experience offered through the program, and anticipated cost of completing the program.[C]

Have each student select a job in the food industry or a professional position in the career fields of food science or nutrition and conduct an analysis of what employers would look for when hiring a person to do this job. Each student's research report should be about the particular job, its responsibilities, the necessary qualifications of an employee, where employers advertise the job, and what a prospective employee would have to demonstrate to an employer in order to be hired. Students should use resources from the classroom and library, assistance from vocational counselors, and interviews with local employers. Evaluate students' reports on the basis of content and effective communication skills.[B] [C]

Have students interview an employer and ask what qualities and characteristics are sought in interviewing prospective employees. Ask students to report findings to the class. As a class, compile a list of the qualities and characteristics most often mentioned.[C]

After students read resources on qualities and characteristics employers seek in employees, lead a discussion on responsibilities associated with jobs relating to food science and nutrition. Consider the following qualities and characteristics:

* Enjoyment of working with people
* Organization
* Competence
* Safety
* Dependability
* Ambition
* Willingness to work hard
* Health
* Physical stamina

KEY QUESTIONS: What qualities and characteristics are desirable for handling some of the responsibilities identified? Which qualities and characteristics do you have that would help promote success on the job?[C]

Ask the students to think about what an employer would need to know about a job in order to hire the best employee to fill the

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[C] = Common Essential Element
[B] = Basic Skill Reinforcement

position. Encourage the students to describe these considerations from the point of view of the employer, not the job seeker. To make a good hiring decision, an employer would need to be informed about the following:

1) The duties and operations of the job and their implications
2) Qualifications of an employee that will best fit the person for the job
3) Sources of desirable employees
4) How to estimate a potential employee's capability to do the job well

Following a class discussion on the employer's concerns in the hiring process, have the students suggest ways they can assess their own qualifications for a job they want. KEY QUESTIONS: How can they learn about what will be required of them in the job? How can they show the potential employer that they have qualifications that are well suited to the job requirements? How can they become a part of the hiring pool? How can they learn whether they have or can develop the skills, attitudes, and motivations to do the job well?[C]

Prepare a bulletin board which depicts positive attitudes that lead to job success. Lead a class discussion about the importance of having a positive attitude. KEY QUESTIONS: What effect can an employee with negative attitudes have on a business? on other employees? What effect can an employee with a positive attitude have on a business? on other employees? How can one develop a positive attitude?[C]

Provide students with various interest, aptitude, and personality assessment inventories which they can complete and analyze so that they have information about their own qualifications for jobs in the food science and nutrition field.[C]

Lead students to brainstorm to create a list careers or jobs outside food and nutrition where employees would benefit by food and nutrition knowledge and skills. Lead a class discussion on how knowledge and skills in food and nutrition would be helpful in the careers or jobs identified.[C]

B. Management practices for people with multiple roles

Have students use references or call local businesses/institutions to get the typical work schedules of persons in the following jobs: hospital dietitian, waiter/waitress or host/hostess, bus person, food vending machine operator, executive chef, butcher, pastry chef, and banquet steward. Before using these work schedules, divide students into groups and have groups list some of the typical family responsibilities and time requirements of persons of

[C] = Common Essential Element

different ages and family situations, such as the following:

1) Man, age 30, married, no children
2) Woman, age 35, divorced, custodial parent of three children, ages 5, 8, and 12
3) Woman, age 55, married, husband disabled due to stroke and requires assistance with meals
4) Man, age 22, married, father of two children, ages six months and three years
5) Woman, age 22, married, mother of two children, ages six months and three years
6) Woman, age 45, married, mother of two teenagers
7) Man, age 35, divorced, custodial parent of three children, ages 4, 9, and 12
8) Man, age 53, married, wife disabled

Assign one of the persons described in the previous activity to each group of students, and have the group examine the work schedules for the positions, considering the personal roles of that person in light of the competing demands of the jobs. Ask each group to identify the job which probably would be the best for the person and the job which would be less desirable because of possible competing demands on the person's time schedule, causing difficulties in the fulfillment of personal roles and responsibilities. KEY QUESTIONS: What jobs in the food and nutrition field appear to demand unusual flexibility in the personal lives of employees? Does it appear that parents of young children would have greater difficulty in doing one of these jobs simply because of personal demands? Why do some jobs, especially those in food service, require this kind of flexibility from employees?[C]

Invite a resource person to speak about aspects of employee and employer expectations in regards to managing job and personal roles and responsibilities. Examples of resource persons include a manager, supervisor, or a small business owner who are employed in jobs in the food industry or in professional positions in food science and nutrition. Have the students prepare written questions to ask the resource person about managing personal roles and responsibilities while at the same time meeting job demands, including competing time schedules. Other questions might include qualities and characteristics desired in employees and employer expectations of employees. Share the questions with the resource person. On a follow-up day, have the students synthesize the suggestions of the resource person, working as a class to develop a list titled, "Home/Work Management Techniques."[B] [C]

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	Lead students to brainstorm and list multiple roles an individual might have if he or she has a career in food science and nutrition, and also is a homemaker, parent and/or spouse. KEY QUESTIONS: What kinds of management practices would be needed to fulfill these multiple roles to the best of one's ability? How would a person's career affect that person's life style? What effect would the career have on the person's family and their total life style?[C]
	Lead a class discussion about the importance of being able to plan, organize, and manage one's own life and the impact that these management skills will have on assuming multiple roles as an adult. KEY QUESTIONS: Why is it important to be organized and able to plan and manage your life? What impact would these management skills have on assuming multiple roles as an adult? Why? What are some ways you could improve in managing your life in terms of responsibilities and roles?[C]
	Lead a class discussion regarding the responsibilities associated with entry-level jobs in food service. KEY QUESTIONS: What personal characteristics would be desirable in a job of this type? Why is responsibility and dependability important for employability? How can one develop the trait of being responsible?[C]
	Ask the manager of a food service establishment to describe the manager's and assistant manager's responsibilities in the facility. Have the resource person discuss the manager's and assistant manager's responsibilities and problems in dealing with the public, personnel, property, products, procedures, and profit. KEY QUESTIONS: Is one manager responsible for all the functions of the food service facility, or are management responsibilities shared by several persons? If management responsibilities are shared, who is responsible for each function? How do the manager's and assistant manager's responsibilities fit into the steps in the management process?[C]
C. Demands and rewards of food science and nutrition careers	Lead a class discussion on reasons why a person might like their job–any job. Pose the question, "What would make a job that you might have to do for several years especially appealing to you?" Compile their ideas on the chalkboard. After the students have listed 15 to 20 items, have them indicate whether particular items are intrinsic rewards of a job, extrinsic rewards, or not classified as a reward. Intrinsic rewards might consist of statements like the following: "Being able to be creative." "Having enjoyable people to work with." Extrinsic rewards would be tangible benefits such as money, time off, or vacation days. Following this

[C] = Common Essential Element

differentiation, show the class a diagram of a career ladder in the food science and nutrition occupational job cluster, preferably one which shows several different jobs at each level. Returning to the list of intrinsic and extrinsic rewards, have the students pick jobs from the career ladder which they think would offer many of the intrinsic rewards from their list. Similarly, have them pick jobs which they think would offer many or higher levels of extrinsic rewards. Finally, have them indicate which jobs might provide high levels of both intrinsic and extrinsic rewards. Lead a class discussion on whether jobs higher on the career ladder seem to offer more of both types of rewards or if there are other patterns in the kinds of jobs the students selected as offering low or high levels of types of rewards. Point out to students the rewards from their list which they did not believe any of the jobs from the career ladder offered.

Have them indicate the reasons why they think food science and nutrition jobs might offer greater rewards of one type and few, if any, rewards of another type.[C]

Contact personnel offices and ask if they would be willing to share copies of job descriptions for various food and nutrition positions in food service businesses, institutions such as hospitals and colleges, kitchens and cafeteria operations, food distribution companies, and food processing and marketing companies if located in the community or region. Working in small groups, have the students analyze the job descriptions, copying from each description any specific statements about work roles and responsibilities, especially as they relate to the employee's work schedule and hours. For example, work roles might include supervision, evaluation, and reporting to management/owners. In terms of scheduling, the job description may indicate that the employee will have hours different from the typical daytime, eight hour schedule and/or that the days worked may include weekends and evenings. On the chalkboard, write the headings "demands" and "privileges." Have the students differentiate between the items they selected from the job descriptions, indicating whether a particular work role or schedule requirement is, in their opinions, a demand in that it is more of a burden on the employee or if it is, instead, a privilege in that it would make the job more enjoyable, flexible, or otherwise positive for the employee. Lead a class discussion on differences in students' perceptions about what constitutes a demand or a privilege for an employee in a job in the food and nutrition career field.[C]

Have students select careers related to food science and nutrition that interest them. Have students interview people employed in the

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[C] = Common Essential Element

CONCEPTS	LEARNING AND EVALUATION EXPERIENCES
	career. KEY QUESTIONS: How did the person get started in his/her career? What education and/or training was required to get the position? What are the demands of the career? What are methods for managing the demands? Can career demands be positive as well as negative? How? What opportunities for advancement are available? What are the advantages and disadvantages of employment in the career area? Why?[C]
D. Effective money management	Have students use resources to review job benefits. Include items such as parking, transportation, and relocation expenses. Lead a class discussion on the resources reviewed. KEY QUESTIONS: How can paid parking and transportation be classified as a job benefit? What benefits are included in relocation expense? Why are they important when considering a career?[B] [C]
	Define *cost of living*. Lead a class discussion on differences in cost of living in various geographical locations when making career decisions. Use Teaching Aid 37, Cost of Living, as a guide. Have students consider costs of local housing, food, utilities, transportation, medical care, taxes, and/or services. If information is available, have students consider the same cost of living factors in other locales for comparison with local figures. KEY QUESTIONS: What impact would cost of living have on career decisions? When could making less really result in making more?[B] [C]
	Invite a company personnel manager representative from a personnel agency, or provide students references to point out examples of employee benefits that would focus on personal and family needs. Examples could include counseling services, child care, recreational/wellness programs, staff development programs, and educational incentives. Address current benefit trends and the ultimate benefit to the employer and family. KEY QUESTIONS: How could provision of these benefits improve family life? work performance? Why would an employer consider it financially advantageous to provide these benefits? Which of these benefits are common in various careers related to food science and nutrition? Why?[C]
	Using resource materials, have students write a report on financial benefits of employment. Include items such as insurance, uniforms, housing, meals, transportation, travel expenses and employee expenses. Have students address the following questions. Evaluate students' papers on the basis of effective communication skills and content. KEY QUESTIONS: How do fringe benefits affect total salary? How can fringe benefits

[C] = Common Essential Element
[B] = Basic Skill Reinforcement

influence a person considering a job? Why is it important to weigh the fringe benefits of one job against those offered by another?[B] [C]

Explain to students the concept of hidden costs of employment. Sample employee costs include the following: initial requirements for additional education/training, periodical professional development requirements, professional organization memberships, initial and renewal license, work space, clothes, business expenses (telephone, supplies, travel, or entertainment), equipment/tools, unsupplied uniforms, required availability of car transportation, and inventory. Guide students in investigating food science and nutrition careers to determine hidden costs to employees. KEY QUESTIONS: What is meant by the quote, "It takes money to make money"? Are the hidden costs identified likely to vary widely from employer to employer within the same career? Why or why not?. Which costs identified could ultimately be paid by the employer and, therefore, become a benefit? How could a job's hidden cost affect job selection? personal money management?[C]

[B] = Basic Skill Reinforcement
[C] = Common Essential Element

TEACHING AID SECTION

Case Study on Weight Consciousness

Janis is 15 and is very concerned about her weight. She is not overweight, but she could safely lose two to three pounds. She is going to go on a zero carbohydrate diet and only consume protein and fat.

PUT FIBER IN YOUR MENU

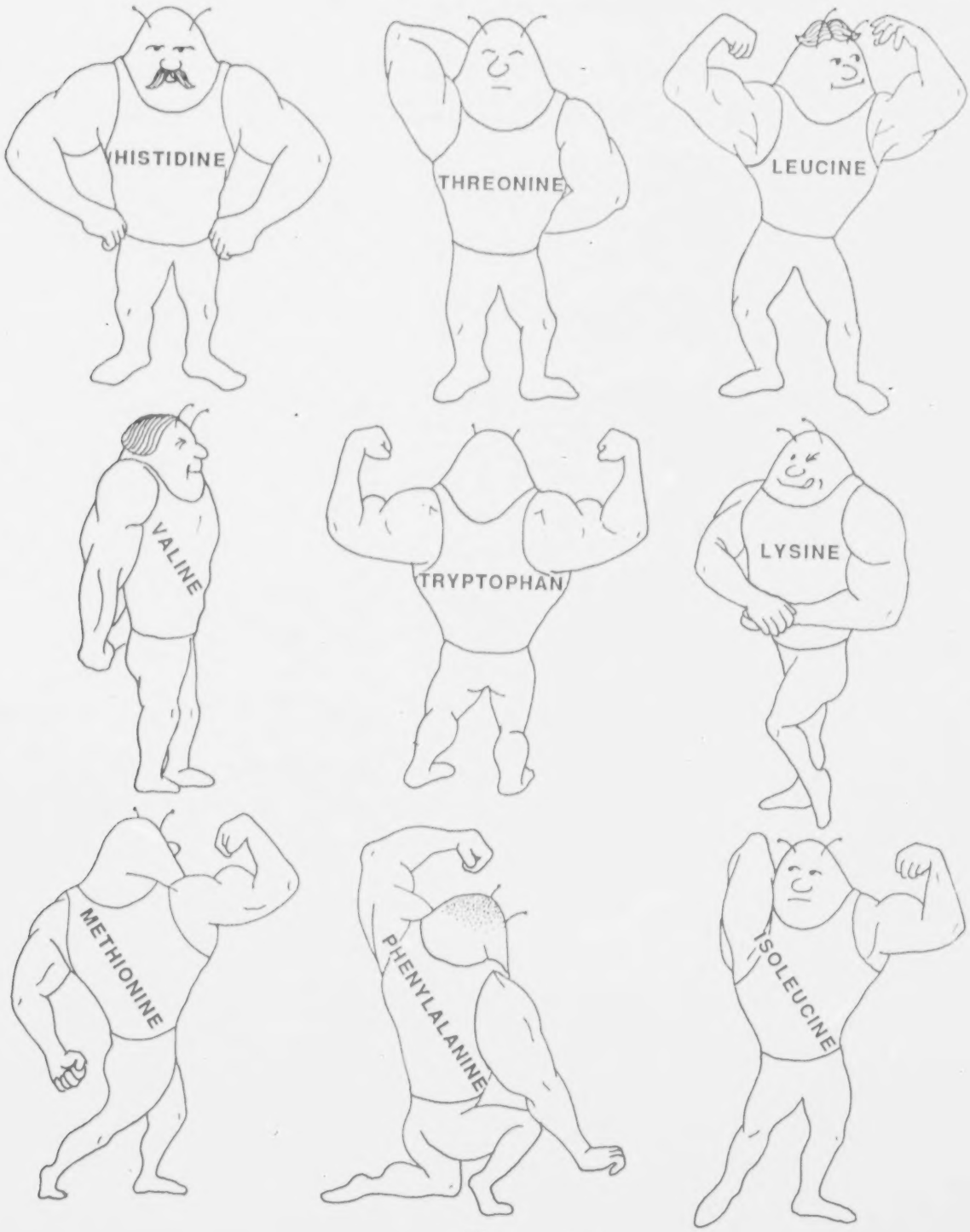
DIRECTIONS: Fiber can be easily added to daily menus. Rewrite the following menus to include sources of fiber at each meal. Circle the fiber sources added to the menus.

Morning Meal	Revised Morning Meal
Orange juice Breakfast taco (Tortilla with scrambled eggs, sausage, cheese, and hot sauce)	
Noon Meal	**Revised Noon Meal**
Carbonated beverage Slices of pizza (3) (Pepperoni with mushrooms and extra cheese) Candy bar	
Evening Meal	**Revised Evening Meal**
Milk Fried chicken Mashed potatoes with gravy Green beans White roll and butter Brownie	
Snacks Throughout Day	**Revised Snacks**
Dry roasted peanuts Cheese and crackers Ice cream	

Case Study on Exercise and Diet

John wants to get in better shape. He has started an exercise program but wants to improve his diet also. His favorite snacks are chocolate candy, peanut butter sandwiches, and cheese and crackers. He also likes fried foods such as french fries and hamburgers. In addition, John drinks several glasses of whole milk each day.

AMINO ACIDS


HISTIDINE
THREONINE
LEUCINE
VALINE
TRYPTOPHAN
LYSINE
METHIONINE
PHENYLALANINE
ISOLEUCINE

ESTIMATING ENERGY OUTPUT

Directions: The following method is only a means of achieving a rough estimate of total energy expenditure. More precise methods for calculating basal metabolic energy and energy for activities may be found in several standard texts.

Basal metabolic energy (BMR) = 1 kilocalorie (kcal)/kilogram (kg)/hour

Example for a 150 lb. person

1) Change pounds to kilograms: $150 \text{ lbs} \times \frac{1.0 \text{ kg}}{2.2 \text{ lb}} = 68 \text{ kg}$

2) Multiply weight in kg by BMR factor: $68 \text{ kg} \times 1.0 \frac{\text{kcal}}{\text{kg}} \text{ per hour} = 68 \frac{\text{kcal}}{\text{hr}}$

3) Multiply kcal used in one hour by hours in a day: $68 \frac{\text{kcal}}{\text{hr}} \times 24 \frac{\text{hours}}{\text{day}} = 1{,}632 \frac{\text{kcal}}{\text{day}}$

Activity energy

Very active = 50% of BMR

Moderately active = 40% of BMR

Mildly active = 30% of BMR

Inactive = 20% of BMR

Example for a 150 pound inactive person:

1,632 kilocalories
x .20 BMR-inactive
326.40 energy for activities

Estimated Total Energy Expenditure:

1,632 kilocalories (BMR)
+ 326 kilocalories (energy for activities)
1,958 kilocalories of energy expended

CALORIE EXPENDITURE

Approximate Energy Expenditure by a 150 Pound Person in Various Activities

Activity	Calories per hour
Lying down or sleeping	80

Activity	Calories per hour
Driving an automobile	120

Activity	Calories per hour
Swimming 1/4 mph	300

Activity	Calories per hour
Running 10 mph	900

Case Study on Pregnancy and Diet

Anna is 24 and is expecting her first child. She has always maintained a reasonable weight, but she is very concerned about gaining too much weight during her pregnancy. She wants to eat nutritionally, but drinking a quart of milk per day and eating all the other appropriate foods seems to be too many calories. She wants to limit her weight gain to approximately 22 pounds, which her doctor feels is a reasonable amount. Using the recommended dietary allowances for pregnant women, plan a three day menu for Anna.

MENU PLANNING SHEET

	Breakfast	Snack*	Lunch	Snack*	Dinner	Snack*
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						
Sunday						

Include Daily:

Fruit and Vegetable Group	4 servings (1 high in vitamin C; 1 deep yellow or green at least every other day)
Bread and Cereal Group	4 servings
Milk and Cheese Group	2-3 servings, ages 0-9 3 servings, ages 9-12 4 servings, teens 2 servings, adults 3 servings, pregnant women 4 servings, nursing women
Meat, Poultry, Fish, and Bean Group	2 or more servings

*Snacks are optional but should be nutritious and planned within the day's recommended allowances.

GUIDE FOR MEAL PLANNING

Breakfast	Fruit Entrée (Cereal or Protein Food) Bread Milk or Other Beverage
Lunch	Entrée (Protein Food) Vegetable or Fruit Bread Milk or Other Beverage
Dinner	Salad Entrée (Protein Food) 2 Vegetables or 1 Vegetable and 1 Fruit Bread Milk or Other Beverage
Snack	Any food group where a serving is needed

Include Daily:

Fruits and Vegetables	4 Servings
Breads and Cereals	4 Servings
Milk and Cheese	2 Servings, Adults 4 Servings, Teens 2-3 Servings, Children
Meat, Poultry, Fish, or Beans	2 Servings or More

*Snacks are optional but should be nutritious and planned within the day's recommended allowances

COMPOSITION OF HUMAN MILK AND COW'S MILK

Constituents	Human Milk (%)	Cow's Milk (%)
Water	87.6	87.2
Protein	1.1	12.8
Casein	(0.4)	(2.7)
Lactalbumin	(0.4)	(0.4)
Lactoglobulin	(0.2)	(0.2)
Fat	3.8	3.8
Lactose	7.0	4.8
Minerals		
Sodium	.015	.058
Potassium	.055	.138
Calcium	.034	.126
Magnesium	.004	.013
Iron	.00021	.00015
Chlorine	.043	.100
Phosphorus	.016	.099
Sulfur	.014	.030
Vitamins (content per 100ml)		
Vitamin A	53.00ug*	34.00ug
Thiamin	27.00ug	38.00ug
Riboflavin	16.00ug	42.00ug
Folic Acid	0.18ug	0.23ug
B12	0.18ug	0.56ug
Vitamin C	4.30ug	1.80ug
Vitamin D	10.00 1.u.**	4.00 1.u.
Vitamin K	25 D.G.units***	100 D.G. units
Calories per ounce	22 kcal	21 kcal

*micrograms **international units ***Dam-Glavind units

Adapted from National Research Council Bulletin No. 254.

Serving Sizes for Children, Teens, and Adults

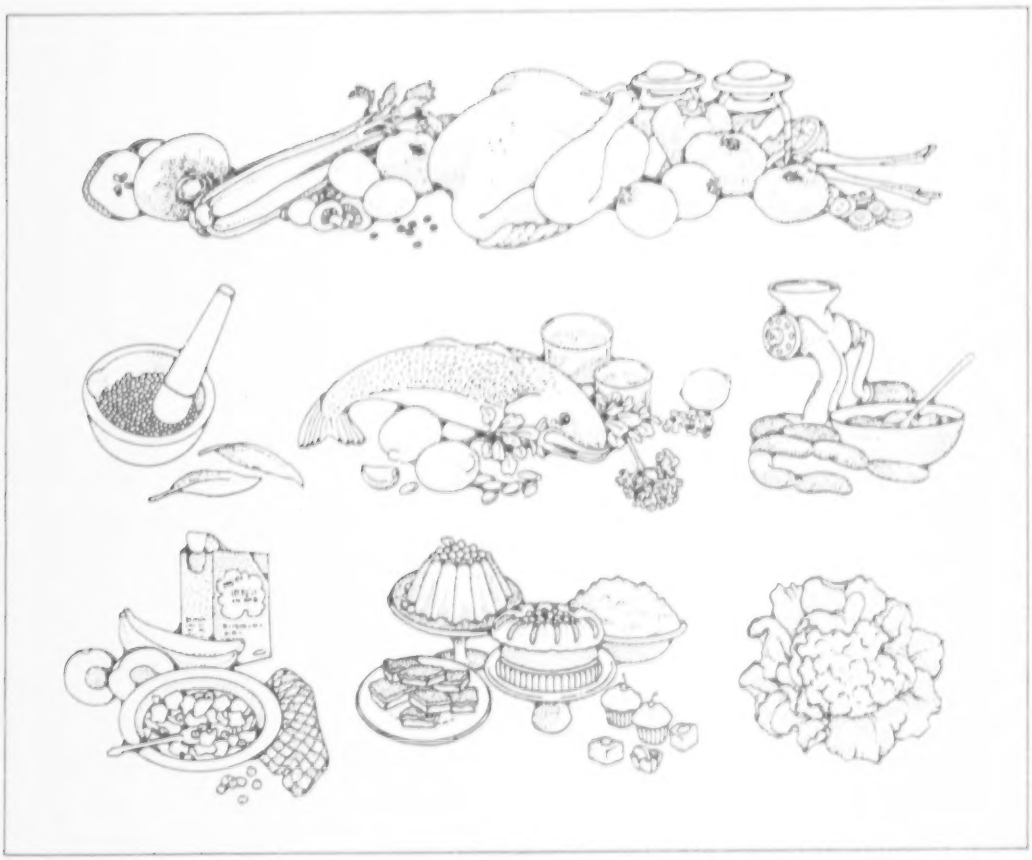
	Fruits and Vegetables	Milk and Milk Products	Breads and Cereals	Meat, Poultry, Fish, and Beans
Children	4 or more	3 or more	4 or more	2 or more
Teens	4 or more	4 or more	4 or more	2 or more
Adults	4 or more	2 or more	4 or more	2 or more

Case Studies on Stress and Diet

1) Nancy is a 38-year-old lawyer working for a private firm that handles criminal cases. She considers her work very stressful and works at least 10 hours each day including Saturdays. She most often eats fast food such as fried chicken, pizza, hamburgers, french fries, and take-out Chinese food. Her father, who is 61, has coronary heart disease. Nancy recently found out that she has hypertension.

2) Joe is a 26-year-old who owns a florist shop. He works six days a week with each day consisting of 12 hours of work. Joe orders take-out food for lunch and dinner. His diet is not balanced, and he has just been informed that an uncle has had a stroke.

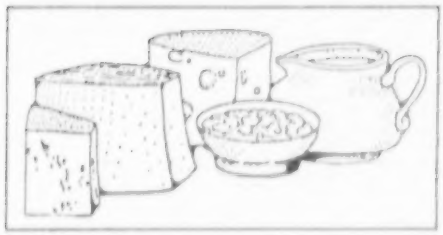
DIETARY GUIDELINES



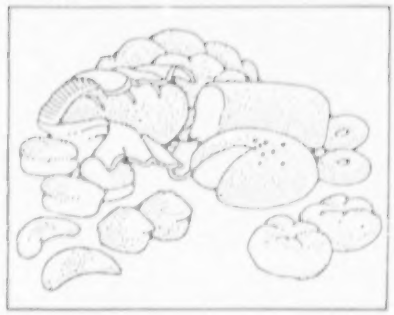
1. Eat a variety of foods.
2. Maintain ideal weight.
3. Avoid too much fat, saturated fat, and cholesterol.
4. Eat foods with adequate starch and fiber.
5. Avoid too much sugar.
6. Avoid too much sodium.

DAILY FOOD GUIDE

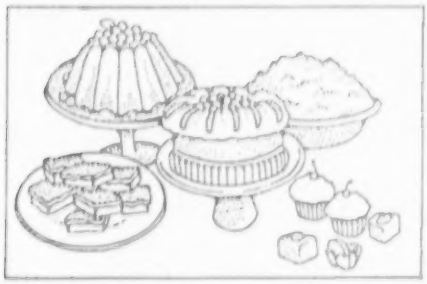
FIVE FOOD GROUPS



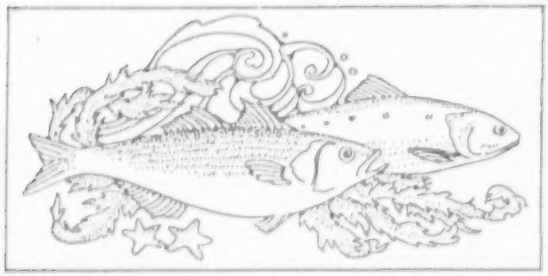
Milk
Cheese
Daily Servings:
Child: 2-3
Teen: 4
Adult: 2



Bread
Cereal
Daily Servings: 4



Fats
Sweets



Meat
Poultry
Fish
Beans
Daily Servings: 2

Vegetables
Fruit
Daily Servings: 4

Planning Food and Nutrition Laboratories

1) The instruction which students receive in the food science and nutrition course may be the only formal education they will ever have in food science and nutrition. Plan for essential learning experiences.

2) Instruction in nutrition should be a part of each experience planned for food science and nutrition classes. Laboratory experiences should be used to build nutrition concepts and food preparation and management skills. These experiences should be interspersed throughout the course. The teacher should avoid separation of instruction in nutrition from that of food preparation.

3) Priorities for necessary principles which must be taught should be set before laboratories are planned.

4) Each laboratory experience should be evaluated in terms of basic behavioral objectives which will be reached for each student who participates. For example, if four students are in a group and only one has the experience of kneading dough, then only one student will develop the skill of preparing dough properly. The other students missed the experience. Can a teacher afford to teach skills to only one-fourth of the students?

5) Students who enter a food science and nutrition class are very anxious to cook. Capitalize on that motivation! However, there are many interesting and exciting experiences with foods which do not involve cooking. Be enthusiastic about those as well. Nutrition concepts should be an integral part of every laboratory experience.

6) Integrate concepts which require short periods for development as multiple activities in the laboratory. For example, teach table manners along with vegetable cookery, safety along with meat cookery, etc.

7) Each member of a laboratory group should have some food preparation responsibility during each laboratory experience.

8) In deciding whether each laboratory group is to prepare the same product in a laboratory experience, be guided by the objectives for the class. If the objectives are to develop a specific principle, then each group must prepare the same type of food. If the objective is to see variety available within a certain category, then different laboratory units may prepare different foods. For example, if one skill to be acquired is proper handling and preparation of salad greens, then each student group must prepare a green salad. If, on the other hand, the objective is to see variety in salads, then each group may prepare a different type of salad. Types of salads include tossed, gelatin, and meat.

9) In selecting food experiences, select those which build basic skills and competencies. For example, instead of using a laboratory on angel biscuits (a combination quick-yeast bread), students should master both quick breads and yeast breads.

10) Demonstrate a food preparation technique before each laboratory experience. Remember, if students already know how to prepare a food, it should not be used as a laboratory experience. If students do not have the skill, a demonstration will better ensure their acquiring the skill.

11) Follow a demonstration with individual student experiences. These do not have to be laboratory experiences, although they may be.

12) When giving a demonstration, provide each student with a copy of the instructions used.

13) In order to have essential information available for multiple lessons, post for the entire semester a calorie chart and a copy of the Daily Food Guide.

Planning Food and Nutrition Laboratories (continued)

14) Collect food containers of all possible types of food. Containers should include cans, boxes, jars, bottles, and labeled sacks. Use in exhibits suggested for developing many concepts.

15) Food models are recommended for use in a variety of exhibits and learning experiences. These are available in cardboard models or in more expensive food facsimiles.

16) The teacher with a limited budget may include valuable experiences by practicing some of the following suggestions:
   a) Have students prepare exhibits using food models instead of preparing actual foods to show nutrition concepts.
   b) Use low cost foods when possible. For example, cabbage slaw instead of tossed green salad, green beans instead of broccoli, meat patties instead of pork chops, plain cake instead of chocolate cake.
   c) Demonstrate food preparation skills instead of having laboratories.
   d) Have tasting events instead of food preparation laboratories.
   e) Limit the number of laboratory experiences to those needed for developing only the basic food and nutrition concepts.

17) Planning prior to the beginning of the course is absolutely essential for effective use of resources such as time, money, etc.

18) The major learning from laboratory experiences may well be the experiences which follow the laboratory. For example, after an experience of preparing a meal of convenience foods, the teacher should follow with activities similar to the following:
   a) Show the contributions the foods make toward the daily nutritional needs of an average teenager.
   b) Make a chart showing differences in cost, time, and energy of the convenience foods as compared to conventional foods.
   c) Make recommendations for ways in which convenience foods may be included in a family's regular meal patterns.

   Evaluations which follow laboratory experiences should be much broader than just checking for quality of product and efficiency in preparation.

Source: Patsy Hallman and Sue Butts, Stephen F. Austin State University. Excerpt from a research project titled, "Nutrition Education in Vocational Home Economics."

Cultural Food Habits

Group	Foods Eaten Most		Possible Deficiencies
Italian	Tomatoes Cheese Sauces Sausages Veal Pressed Meat Bread	Highly Seasoned Foods Green Vegetables Fresh Fruits Goat's Milk Cheese Pasta (macaroni products)	Milk Fresh Meats Without a garden, they will lack fresh vegetables and fruits of prohibitive cost Iron & Other Minerals
U.S. South	Hot Breads Corn Bread Rice Sweet Potatoes Black-Eyed Peas Greens	Beans Hominy Grits Fish Chicken Watermelon Game Meat	Milk Butter Eggs Cheese Raw Vegetables Meat
U.S. Mid-West	Bread & Cakes Canned & Frozen Vegetables Dairy Products Meat (beef, pork) Potatoes Gravies		Salad Raw Vegetables Green Vegetables Minerals
Chinese	Vegetables Meats Fish and Poultry (small amounts) Pork Rice or Wheat Cereals		Fat Milk Cream Raw Vegetables Green and Yellow Vegetables Vitamins A, B, & C
Mexican	Dried Beans Chili Peppers Corn Rice	Tortillas Tomatoes Meat (beef, pork) Fruit	Whole Grain Cereals (other than corn) Milk
Jewish	Milk Cheese Dishes Horseradish Dried Nuts & Fruit Fish (fresh & salt) Chicken	Whole Grain Breads & Cereals Noodles Matzos (at Passover) Meat & Vegetable Soup Rich Pastries	Fresh Fruit Fresh Vegetables

FOOD LABELS

LESUPREME
Sweet Peas

The Greenery Company

NET WT. 17 OZ. (1 LB. 1 OZ.)
WT. OF PEAS 10.3 OZ.

Ingredients: _____

NUTRITION INFORMATION

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCE (U.S. RDA)

LESUPREME
Sweet Peas

The Greenery Company

NET WT. 17 OZ. (1 LB. 1 OZ.)
WT. OF PEAS 10.3 OZ.

92

TA 17

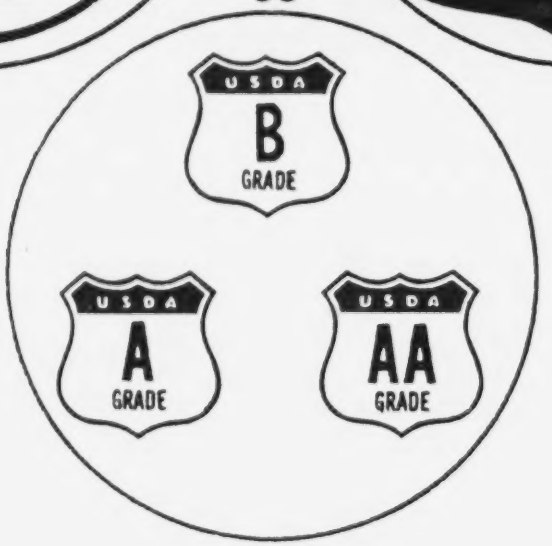
98

98

USDA GRADE LABELS

Poultry

Eggs



UNIVERSAL PRODUCT CODE AND CASH REGISTER TAPE

SCANNERS READ THESE BARS AND TRANSLATE THEM SO THE REGISTER CAN RING UP THE ITEM AND THE PRICE.

This number identifies the product category.

These numbers identify the product.
These numbers identify the manufacturer.

SUPREME SUPERMARKET 538
16. HNZ BBQ W-O 1.09
RUSSETT POTATOES 1.05
2.69 LB AT .39/LB

TOTAL $2.14

CASH TND $2.15
CHANGE DUE $ .01

LAURIE 4 TS-21
10/11/81 11.42 43023
THANK YOU, COME AGAIN
DOUBLE STAMPS TODAY

EXAMPLES OF FOOD AND NUTRITION LEGISLATION

1850 California passed a pure food and drink law.

1897 Tea Importation Act was passed, providing for inspection of all tea entering U.S. ports.

1906 Original Food and Drug Act of 1906 passed, prohibiting interstate commerce in misbranded and adulterated foods, drinks, and drugs.

1906 Meat Inspection Act was passed, addressing unsanitary conditions in meat packing plants.

1913 Gould Amendment was enacted, requiring that definite quantity information appear on food packages.

1930 McNary-Mapes Amendment was enacted, authorizing standards of quality and fill of container for canned food.

1938 The Federal Food, Drug, and Cosmetic (FDC) Act of 1938 was enacted containing food-related provisions which:

* Authorized standards of identity, quality, and fill of container for foods
* Authorized factory inspections

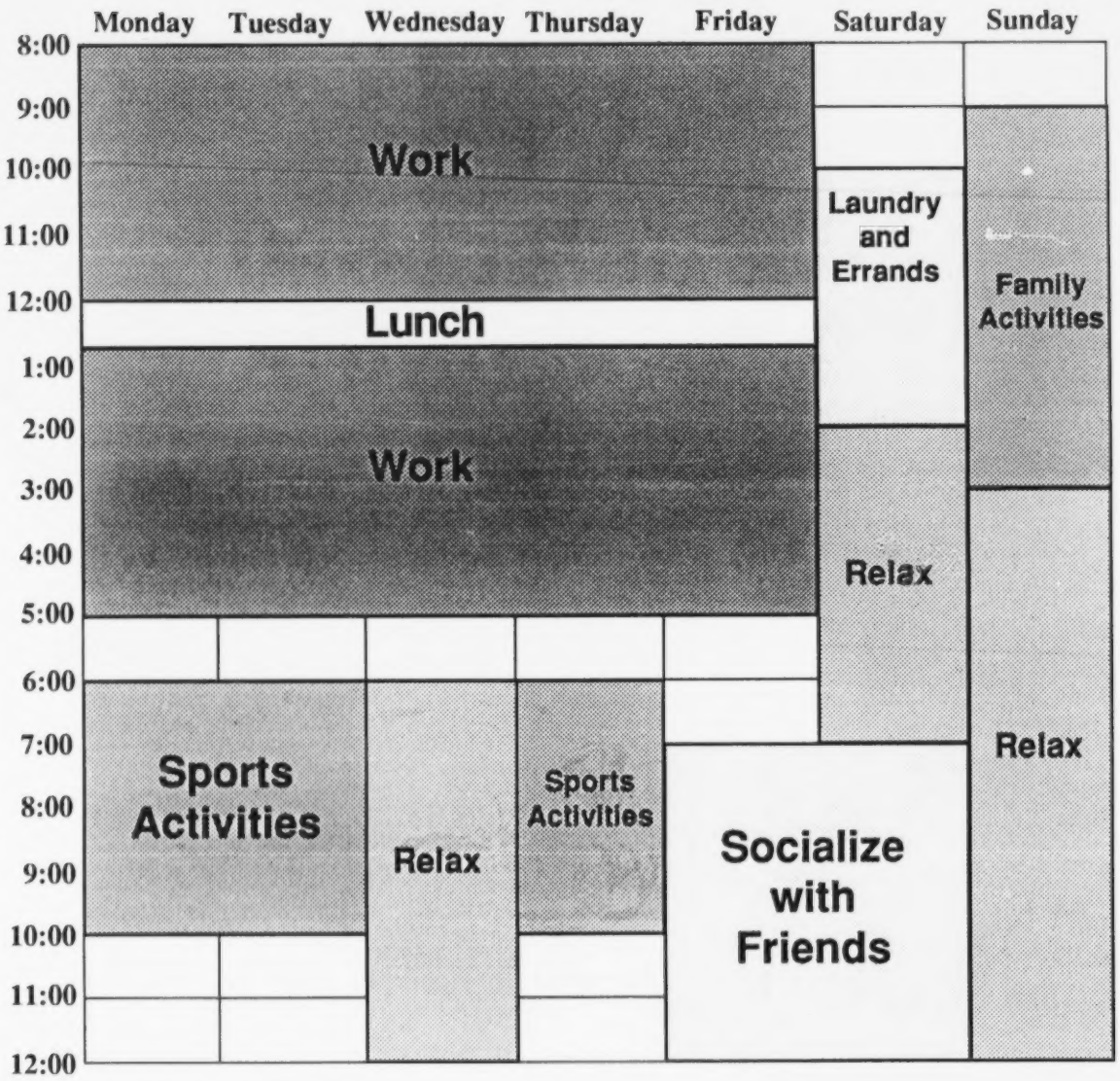
1939 First Food Standards were issued for canned tomatoes, tomato purée, and tomato paste.

1950 Oleomargarine Act was passed, requiring prominent labeling of colored oleomargarine to differentiate it from butter.

1958 Food Additives Amendment was enacted, prohibiting use of new food additives until safety is established and FDA issues use regulations.

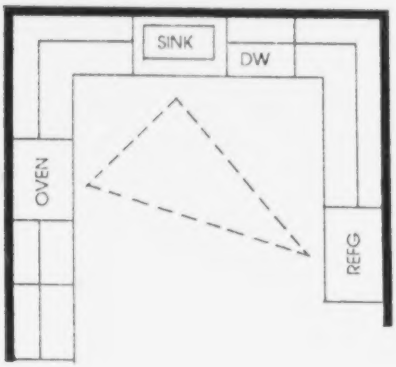
1960 Color Additive Amendments were enacted, allowing FDA to set regulations for safe use of color additives in foods, drugs, and cosmetics.

David's Work and Activity Schedule

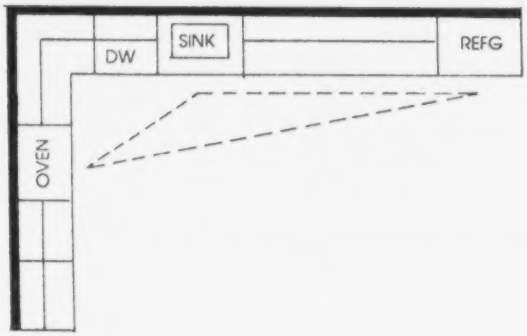


KITCHEN PLANNING

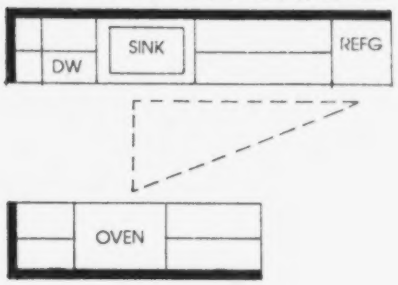
U SHAPE



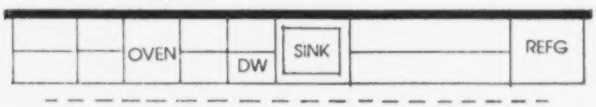
L SHAPE

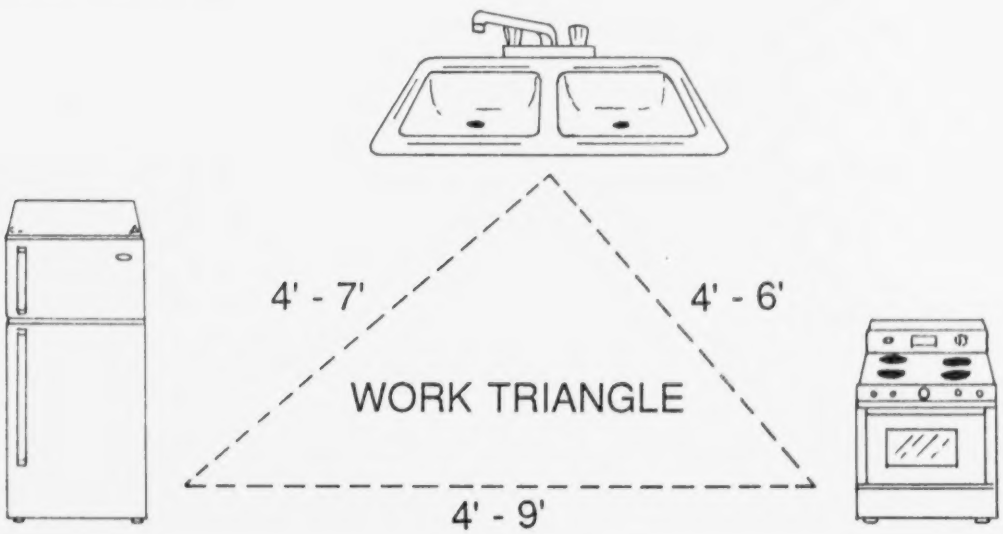


CORRIDOR SHAPE

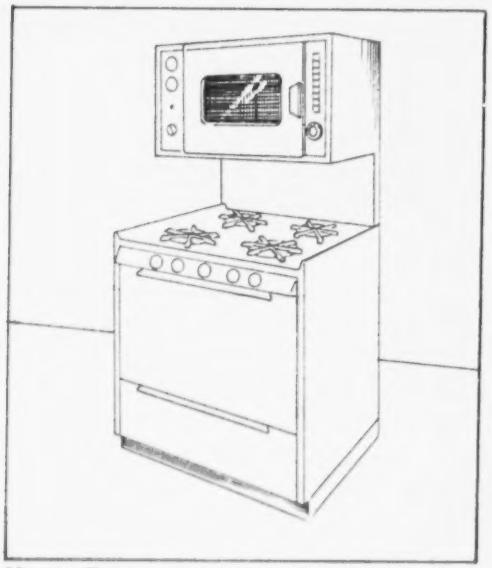


ONE WALL

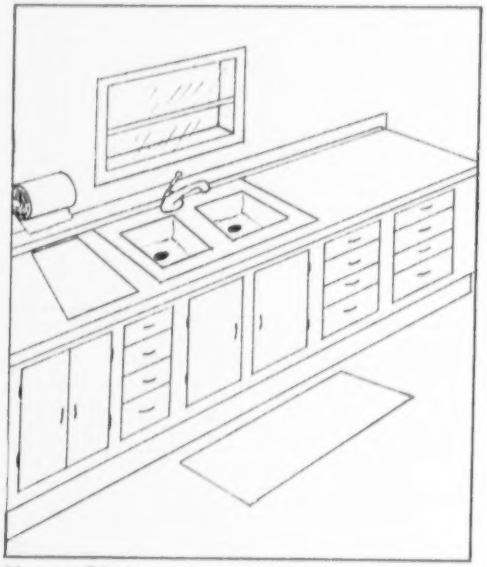




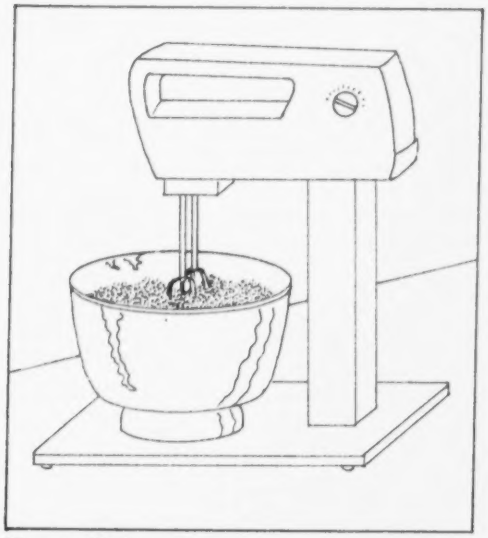
KITCHEN STORAGE



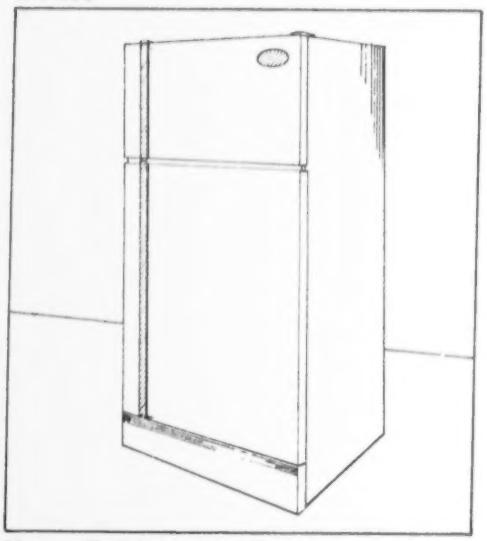
Near Range
Cookware
Small cooking utensils
Canned goods, dry goods and seasoning used in cooking



Near Sink
Equipment first used with water
Supplies used in clean-up
Trash and garbage containers
Dish cloths and paper towels
Dishes

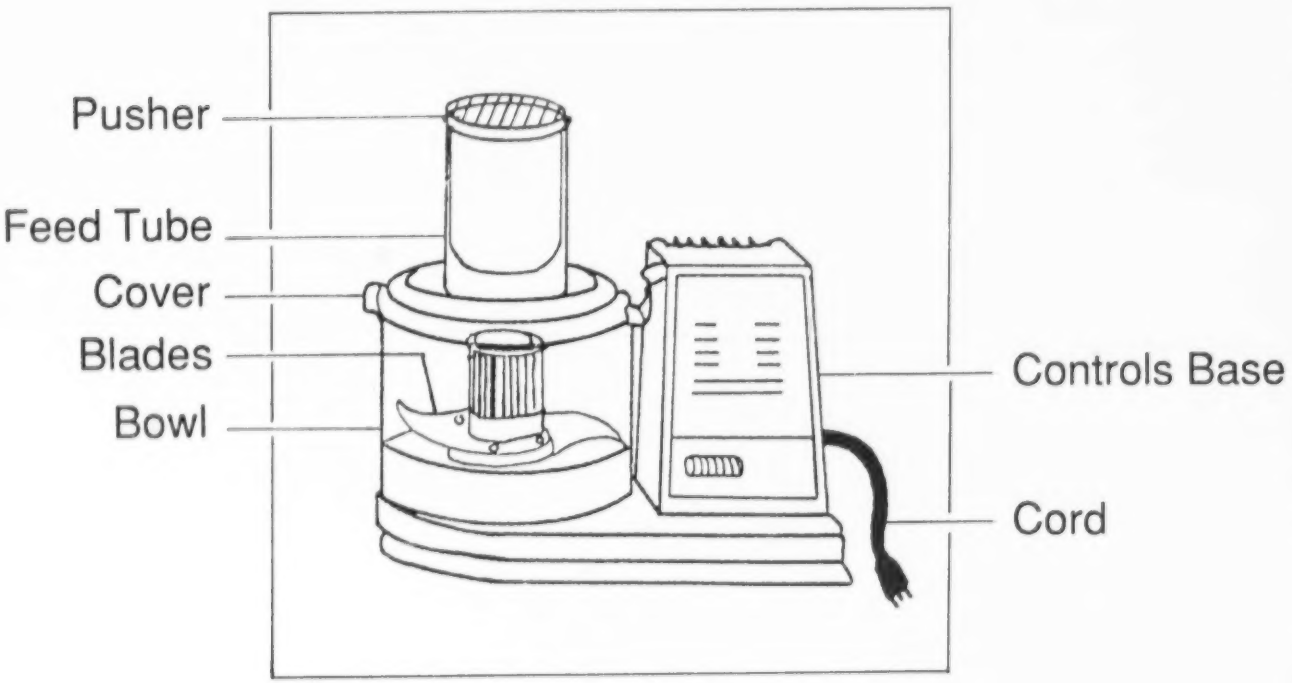


Near Mixing Area
Mixer
Mixing bowls and utensils
Baking pans and utensils
Staples, spices, and food mixers

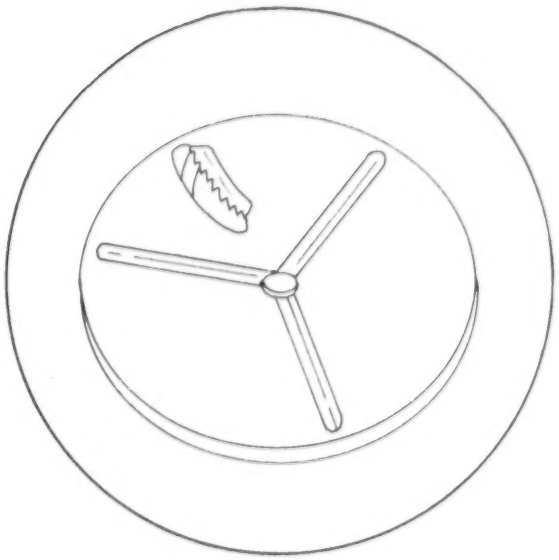


Near Refrigerator/Freezer
Wrapping products
Storage containers
Can opener and small equipment for preparing food from the refrigerator/freezer

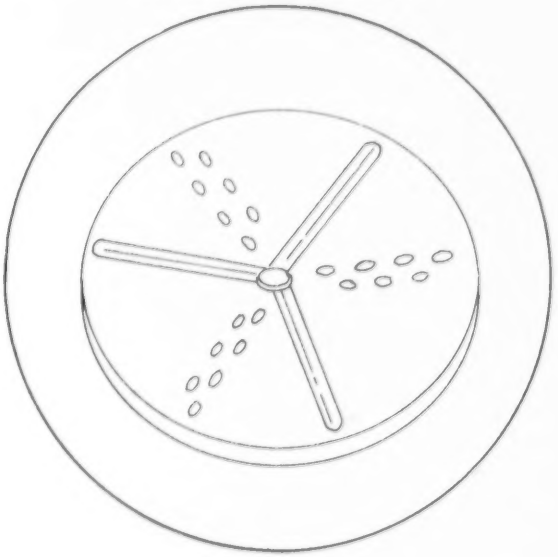
FOOD PROCESSOR



Slicing Disk



Shredding Disk

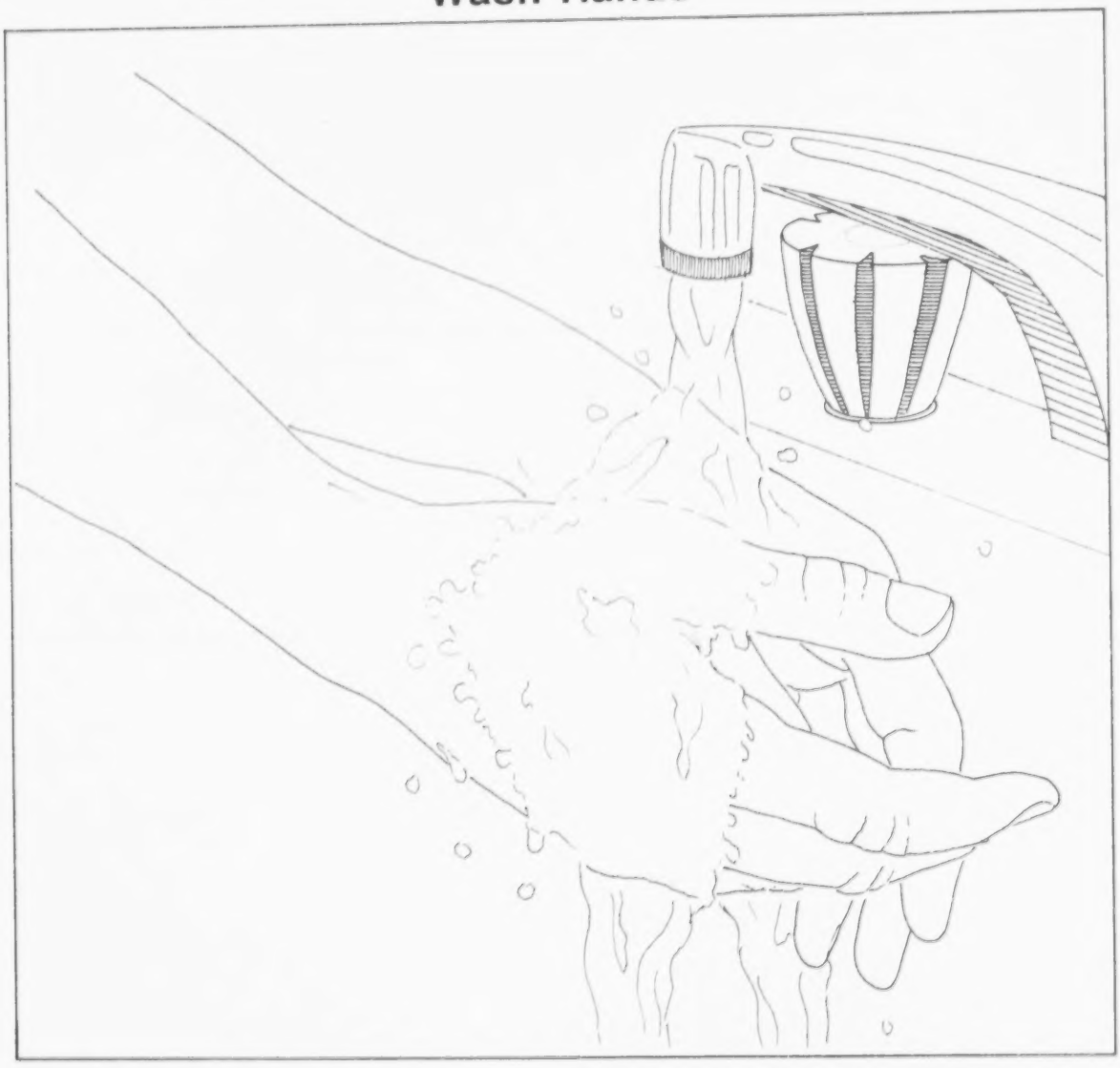


SAFETY PRECAUTIONS FOR FOOD SERVICE EMPLOYEES

1. Do not wear loose fitting or billowing garments or jewelry which can catch on objects.
2. Restrain loose hair, using a hair net or hat if required by health codes.
3. Handle hot foods and cooking utensils with dry pot holders.
4. Wear protective clothing and eye protection, including waterproof gloves and aprons when handling items which can damage the skin, eyes, or clothing.
5. Wipe up spills on the floor as soon as possible; post signs where surfaces are wet and slippery after a large area of floor space has been mopped.
6. Wash sharp objects, such as knives, separately. When hand washing these objects, do not place them in the dishwasher without immediately washing, rinsing, and removing to dry.
7. Turn pot and pan handles to the inside of the range top when they are left unattended during heating.
8. Use safety guards on all equipment where they are provided.
9. Use ventilation hoods and fans when operating cooking equipment in an area where ventilation is necessary.
10. Never transfer cleaning products or chemicals to unmarked containers.
11. Never mix cleaning products unless instructions specifically say to do so and how.
12. Follow "No Smoking" warnings in the work area.
13. Know where exits, fire emergency boxes, and fire extinguishers are located.
14. Know fire emergency procedures and what phone numbers to call in case of emergency.
15. Clean up cluttered work areas as soon as possible after finishing with equipment and supplies.
16. Use cleaning products and chemicals according to label instructions.
17. Be cautious when using water close to electrical outlets and appliances.
18. Keep clothing, towels, etc. away from flames and heat sources.

HAND SANITATION

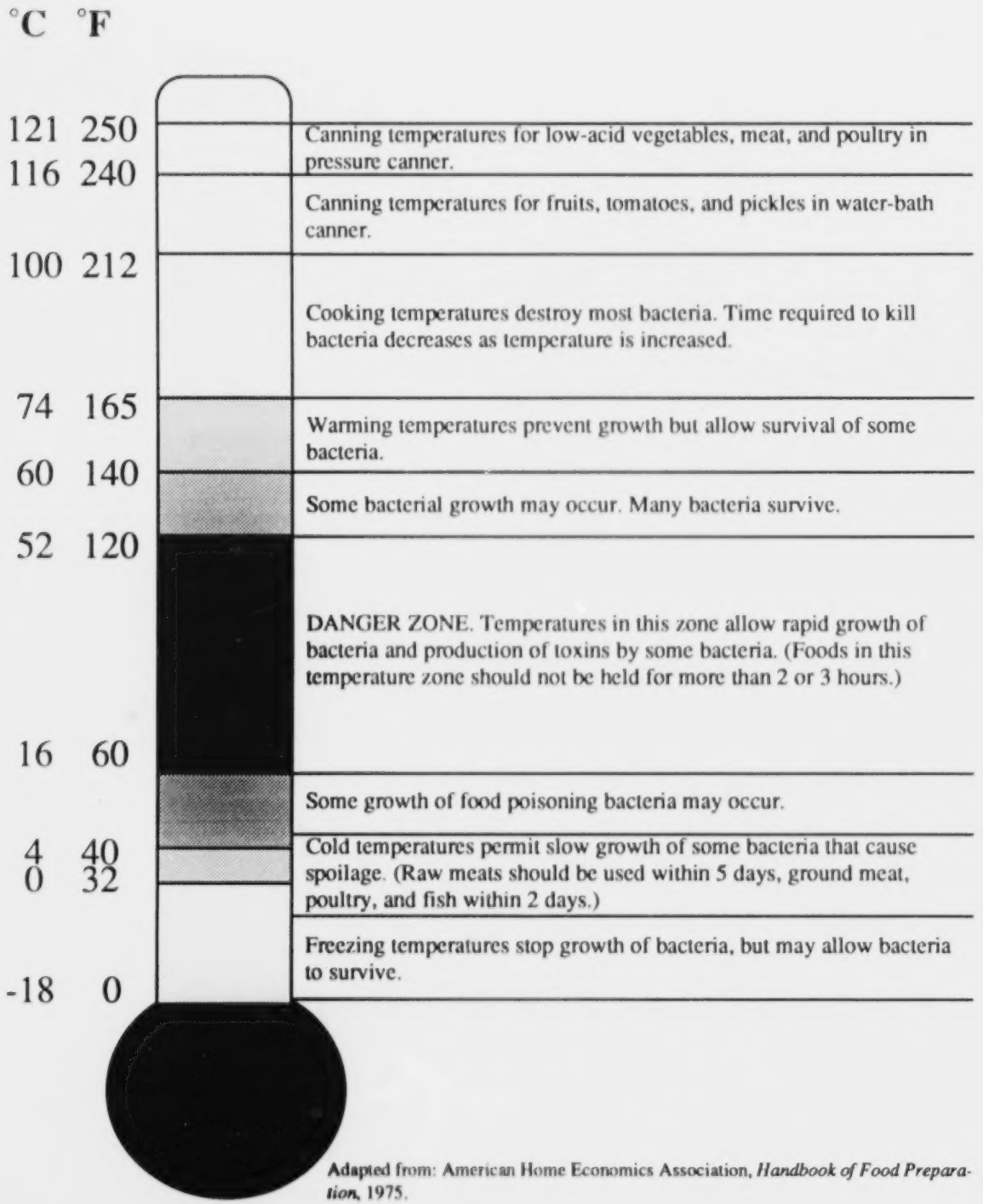
Wash Hands



Before: Starting to work
Eating

After: Visiting restroom
Coughing or sneezing

Temperature of Food for Control of Bacteria


°C °F
121 250
116 240
100 212
74 165
60 140
52 120
16 60
4 40
0 32
-18 0
Canning temperatures for low-acid vegetables, meat, and poultry in pressure canner.
Canning temperatures for fruits, tomatoes, and pickles in water-bath canner.
Cooking temperatures destroy most bacteria. Time required to kill bacteria decreases as temperature is increased.
Warming temperatures prevent growth but allow survival of some bacteria.
Some bacterial growth may occur. Many bacteria survive.
DANGER ZONE. Temperatures in this zone allow rapid growth of bacteria and production of toxins by some bacteria. (Foods in this temperature zone should not be held for more than 2 or 3 hours.)
Some growth of food poisoning bacteria may occur.
Cold temperatures permit slow growth of some bacteria that cause spoilage. (Raw meats should be used within 5 days, ground meat, poultry, and fish within 2 days.)
Freezing temperatures stop growth of bacteria, but may allow bacteria to survive.

Adapted from: American Home Economics Association, *Handbook of Food Preparation*, 1975.

Sample Recipe

General Directions for Writing Recipes

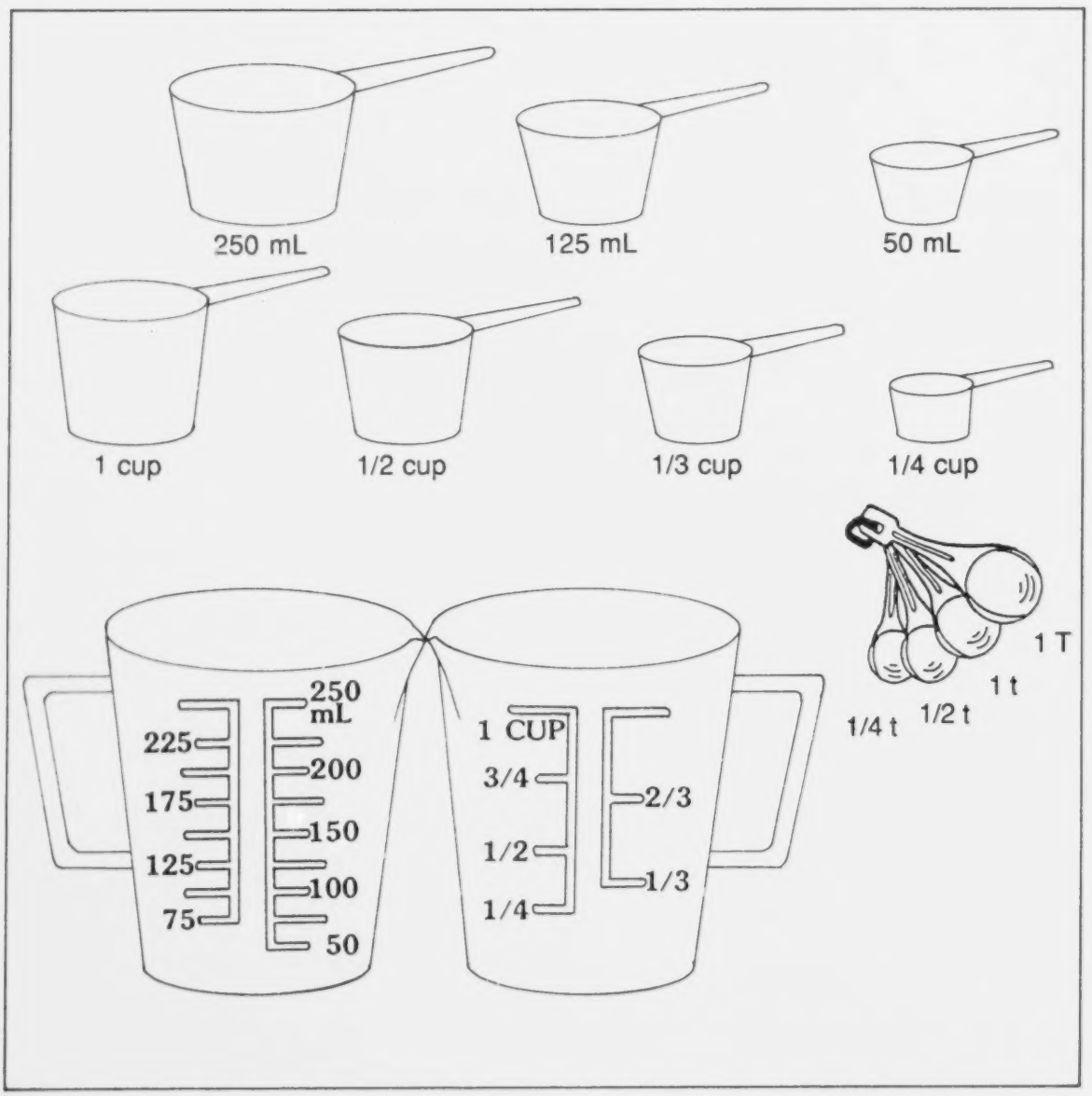
- Capitalize first letters in the title.
- Do not capitalize ingredients except proper names.
- Use figures for fractions.
- Do not use abbreviations for amounts of instructions.

Broccoli, Chicken, and Rice Casserole

1 cup celery, chopped
1 cup onion, chopped
2 cups instant rice, cooked
1 Tablespoon margarine
1 cup cream of chicken soup
1 8-ounce jar processed cheese spread
1 10-ounce package frozen chopped broccoli, partially thawed
3/4 cup evaporated or whole milk
3 cups boneless, chopped, cooked chicken

Cook rice according to directions on package. Saute' celery and onions in margarine. Combine soup, celery, onion, broccoli, milk, rice, and cooked chicken. Pour into one large 13"X 9"X2" casserole dish. Dot with cheese spread. Bake at 350° for 20-30 minutes or until casserole is warm and cheese is melted. Makes 8-10 servings.

U.S. STANDARD AND METRIC MEASUREMENTS



Laboratory Activity Evaluation

	Good	Fair	Needs Improvement
Aesthetics			
color			
temperature			
flavor			
shape			
aroma			
variety			
texture			
Preparation			
efficiency			
food preparation			
principles followed			
on time			
effective time schedule			
orderliness			
correct use of equipment			
safety and sanitation			
Service			
correct table setting			
appropriateness of serving			
attractiveness of table			

Nutritional Adequacy

Comments

Create A Low-Fat Menu

Directions: Rewrite the following menu to lower the fat content.

Morning Meal	Revised Morning Meal
1 bagel with cream cheese 2 slices of bacon chocolate milk	
Noon Meal	**Revised Noon Meal**
3 slices of pizza (sausage, olives, extra cheese) 1 slice of cheesecake milk shake	
Evening Meal	**Revised Evening Meal**
steak fried potatoes salad with dressing white roll and butter ice cream sundae with whipped cream whole milk	
Snacks During The Day	**Revised Snacks**
dry roasted peanuts cheese and crackers banana nut bread potato chips	

Create A Low-Sugar Menu

Directions: Rewrite the following menu to lower the sugar content.

Morning Meal	Revised Morning Meal
2 glazed doughnuts filled with jam Kool-Aid	
Noon Meal	**Revised Noon Meal**
candy bar carbonated beverage	
Evening Meal	**Revised Evening Meal**
glazed ham candied sweet potatoes canned corn fruit cocktail root beer	
Snacks During The Day	**Revised Snacks**
gumdrops cake with frosting sugar cookies sugar-syrup coated popcorn	

Create A Low-Sodium Menu

Directions: Rewrite the following menu to lower the sodium content.

Morning Meal	Revised Morning Meal
2 fried eggs 2 slices of bacon 2 pieces of white toast orange juice	
Noon Meal	**Revised Noon Meal**
chicken noodle soup 1 large pickle saltine crackers apple carbonated beverage	
Evening Meal	**Revised Evening Meal**
meat loaf spinach deviled eggs white roll and butter bread pudding buttermilk	
Snacks During The Day	**Revised Snacks**
banana crackers and cheese spread apple pie	

Occupational Opportunities

Dietetics

- Registered Dietitian
- Therapeutic Dietitian
- Clinical Dietitian
- Educational Dietitian
- Administrative Dietitian
- Consulting Dietitian
- Food Services Director
- Food Services Manager
- Cafeteria Supervisor
- Restaurant Manager

Entry-level occupational opportunities may involve assisting professionals in the area of dietetics.

Food Science

- Food Scientist
- Food Technologist
- Research Scientist
- Director of Quality Control
- Plant Manager
- Director of Research
- Process Engineer
- Equipment Designer
- Consultant

Entry-level occupational opportunities may involve assisting professionals in the area of food science.

Human Nutrition

- Nutrition Research Specialist
- Nutrition Consultant
- Public Health Nutritionist
- Food Chemist
- Biochemist
- Food Scientist

Entry-level occupational opportunitive may involve assisting professionals in the area of human nutrition.

Food Preparation

entry-level

- Kitchen Helper
- Assistant Cook
- Assistant Baker
- Busperson
- Waiter or Waitress
- Dishwasher

skilled

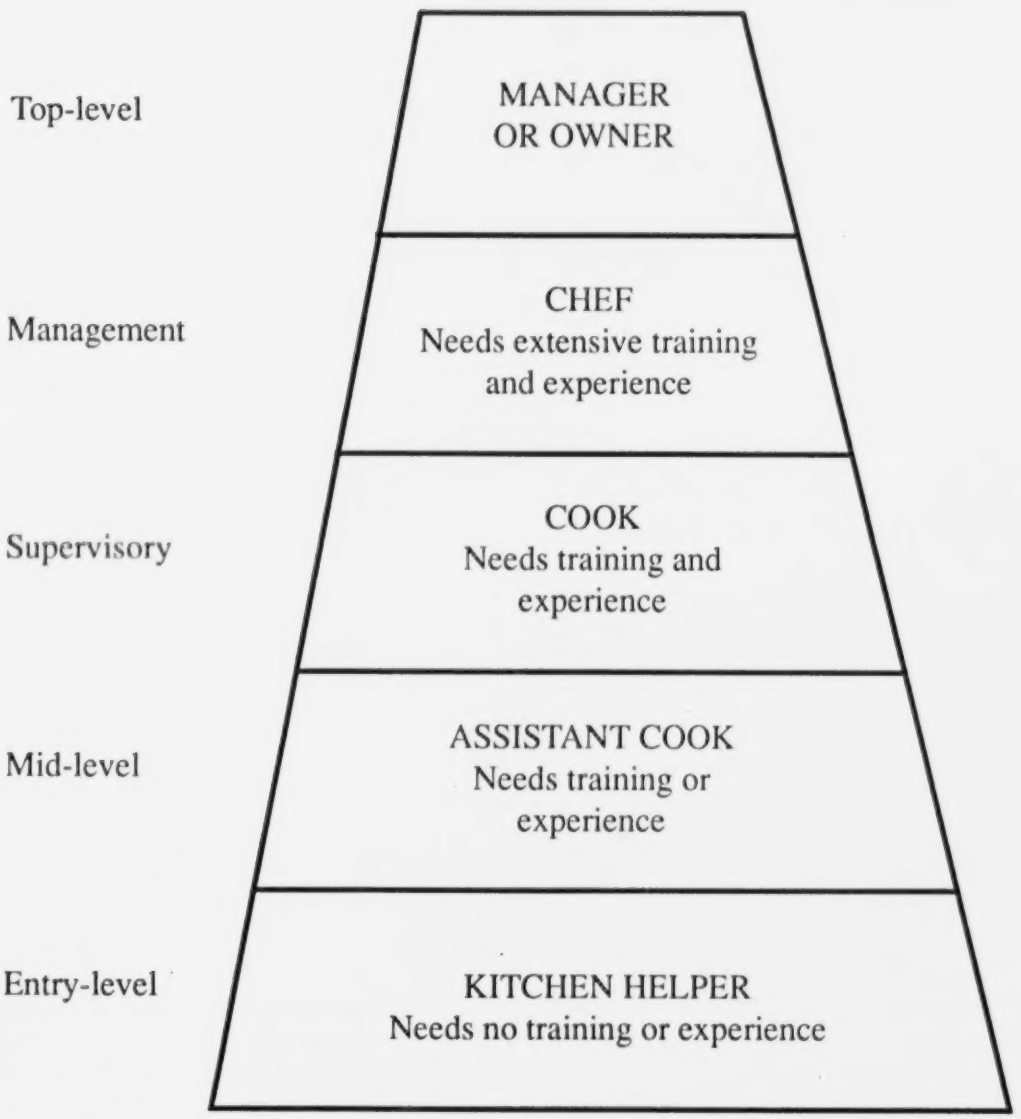
- Food Assembler
- Chef
- Cook
- Baker
- Kitchen Supervisor
- Meat Cutter
- Purchasing Agent
- Caterer's Helper

professional

- Assistant Restaurant Manager
- Restaurant Manager
- Food Production Manager
- Chain Executive
- Personnel Director
- Training Director
- Menu-Maker
- Merchandising Supervisor
- Advertising Director
- Recipe Development Director
- Business Manager
- Business Owner

CAREER LADDER

LEVELS

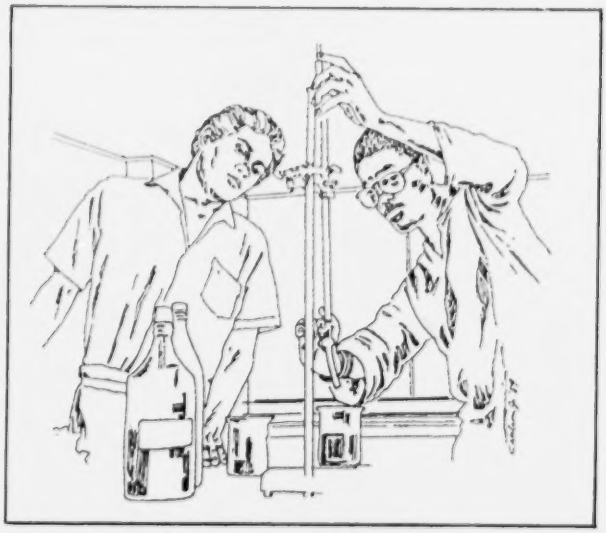


CAREER AWARENESS

Chef

Demonstrator

Hospital Dietitian



Food Researcher

Cost of Living

Before accepting a job, it is essential to compare each locale's cost of living. What would be a generous starting salary in the Midwest may cover only the rent of a small apartment in a large East or West Coast metropolis. According to the following table, if you received job offers in Kansas City and New York City, you would not have to earn much in Kansas City to maintain a New York style of living. Use the following equation and table to compare the salaries of different locals.

Equation: $\text{City \#1} \dfrac{\text{Index \#}}{\text{Index \#}} \text{ X Starting Salary} = \text{Equivalent Salary}$
$\text{City \#2}$

Example: $\text{New York} \dfrac{145.8}{97.1} \text{ X } \$24{,}000 = \$36{,}037$
Kansas City

$\text{Kansas City} \dfrac{97.1}{145.8} \text{ X } \$24{,}000 = \$15{,}984$
New York

Inter-City Cost of Living Index

Los Angeles	115.4
Denver	102.3
Washington, D.C.	133.2
Atlanta	110.8
New Orleans	97.5
Kansas City	97.1
Albuquerque	102.1
New York City	145.8
Oklahoma City	93.8
Dallas	104.4

Source: The college edition of the *National Business Employment Weekly*, "Managing Your Career". Spring 1988. Dow Jones and Company, Inc.